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Drinking Water Surveillance Program

KITCHENER WELL SUPPLY

Annual Report 1989



Environment
Environnement

**KITCHENER
WELL SUPPLY**

DRINKING WATER SURVEILLANCE PROGRAM

ANNUAL REPORT 1989

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January 1991



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EXECUTIVE SUMMARY

DRINKING WATER SURVEILLANCE PROGRAM

KITCHENER WELL SUPPLY
1989 ANNUAL REPORT

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. In 1989, 65 plants were being monitored.

The Kitchener Well Supply source consists of many wells. Three locations were sampled on the DWSP; K70, an induced infiltration system located on the east side of Kitchener adjacent to the Grand River, K21 (Mannheim East/West), a high capacity overburden well field located at the western city limit of Kitchener, and Strange Street Reservoir, one of the first well fields developed in Kitchener located near the city-centre.

Samples were taken of raw and treated water from the K70 well, raw water from the K21 well and treated water from the Mannheim Reservoir, treated water from the Strange Street well and water from one house in the distribution system. The Kitchener Well Supply was sampled for the presence of approximately 180 parameters monthly. Parameters were divided into the following groups: Bacteriological, Inorganic and Physical (Laboratory Chemistry, Field Chemistry and Metals) and Organic (Chloroaromatics, Chlorophenols, Pesticides and PCB, Phenolics, Polyaromatic Hydrocarbons, Specific Pesticides and Volatiles). Chlorophenols and Specific Pesticides were analyzed in June and November only.

A summary of results is shown in Table A.

Inorganic and Physical parameters were below any applicable health related guidelines.

Samples were analyzed monthly for the presence of approximately 110 Organics. Levels did not exceed health related guidelines.

During 1989, the DWSP sampling results indicated that the Kitchener well supply produced generally good quality water and this was maintained in the distribution.

TABLE A

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE BY SCAN (1985)

SCAN	K21 RAW TESTS	POSITIVE TESTS	MANNHEIM RESERVOIR TESTS	POSITIVE TESTS	SITE 1 TESTS	POSITIVE TESTS	STRANGE ST RESERVOIR TESTS	POSITIVE TESTS	K70 RAW TESTS	POSITIVE TESTS	K70 TREATED TESTS	POSITIVE TESTS	
BACTERIOLOGICAL	36	1	2	36	0	0	36	10	27	36	9	25	36
CHEMISTRY (FLD)	26	23	68	50	40	80	93	51	56	58	48	82	24
CHEMISTRY (LAB)	252	179	71	252	167	66	444	369	83	252	179	71	252
METALS	288	140	48	288	150	52	564	340	60	288	172	59	288
CHLOROPHATICS	168	0	0	154	0	0	168	0	0	154	0	0	154
CHLOROPHENOLS	12	0	0	12	0	0	-	-	12	0	0	12	0
PAN	191	0	0	191	0	0	-	-	191	0	0	192	0
PESTICIDES & PCB	408	0	0	387	0	0	343	0	0	387	0	0	387
PHENOLICS	12	3	25	12	4	33	-	-	12	4	33	12	7
SPECIFIC PESTICIDES	65	0	0	64	0	0	12	0	0	64	0	0	64
VOLATILES	348	1	0	348	22	6	348	24	6	348	39	11	348
TOTAL	1806	347	1794	343	2006	794	1802	449	1769	391	391	1805	440

NO KNOWN HEALTH RELATED GUIDELINE WAS EXCEEDED

A POSITIVE VALUE DENOTES THAT THE RESULT IS GREATER THAN THE STATISTICAL LIMIT OF DETECTION AND IS QUANTIFIABLE
 A '-' INDICATES THAT NO SAMPLE WAS TAKEN

DRINKING WATER SURVEILLANCE PROGRAM

KITCHENER WELL SUPPLY
1989 ANNUAL REPORT

INTRODUCTION

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. In 1989, 65 plants were being monitored.

The DWSP was initiated in Kitchener in the spring of 1987. An annual report was published for 1987 and 1988 (ISSN 0840-5190).

This report contains information and results for 1989.

In order to accommodate the increasing number of plants on the DWSP and to facilitate the timely completion of the 1989 annual reports, plants with two or more years of published data will receive an abbreviated annual report. This report maintains the same general format as in previous years but does not include a comprehensive discussion of results. For more detail on the parameters analyzed and discussion of results, consult the 1987 and 1988 reports.

PLANT DESCRIPTION

The Kitchener Well Supply source consists of many wells. Three locations were sampled on the DWSP; K70, an induced infiltration system located on the east side of Kitchener adjacent to the Grand River; K21 (Mannheim East/West), a high capacity overburden well field located at the western city limit of Kitchener; and Strange Street Reservoir, one of the first well fields developed in Kitchener located near the city-centre.

The K21 (Mannheim East/West) has flows for day of sampling ranging from $28.9 \times 1000 \text{ m}^3/\text{day}$ to $39.0 \times 1000 \text{ m}^3/\text{day}$. K70 (Recharge well) has flows on the day of sampling ranging from $2.1 \times 1000 \text{ m}^3/\text{day}$ to $3.0 \times 1000 \text{ m}^3/\text{day}$. The Strange Street reservoir has flows ranging from $4.5 \times 1000 \text{ m}^3/\text{day}$ to $9.8 \times 1000 \text{ m}^3/\text{day}$. These three wells are disinfected with chlorine.

The Kitchener Well Supply serves a population of approximately 144,000 people.

The sample location is shown in Figure 1. General information is presented in Table 2.

FIGURE 1

DRINKING WATER SURVEILLANCE PROGRAM
SITE LOCATION MAP
KITCHENER WELL SUPPLY SYSTEM



TABLE 1
DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

IN-PLANT MONITORING KITCHENER WELL SUPPLY 1989

<u>PARAMETER</u>	<u>LOCATION</u>	<u>FREQUENCY</u>
Chlorine residual total	Treated	daily

TABLE 2

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

GENERAL INFORMATION

KITCHENER WELL SUPPLY

LOCATION: REGIONAL MUNICIPALITY OF WATERLOO
C/O MARSLAND CENTER
20 ERB STREET WEST
WATERLOO, ONTARIO
N2J 4G7

SOURCE: GROUNDWATER

DESIGN CAPACITY: 100 X 1000 M³/DAY

OPERATION: MUNICIPALITY

SYSTEM MANAGER: R. MACDONALD

MINISTRY REGION: WEST CENTRAL

DISTRICT OFFICER: D.R. IRELAND

<u>MUNICIPALITY SERVED</u>	<u>POPULATION</u>
KITCHENER/WATERLOO	144,000

SAMPLING AND ANALYSES

Plant operating personnel perform analyses on parameters for process control listed in Table 1.

Samples were taken from raw well K21, the treated Mannheim reservoir and one distribution location. The K70 recharge well was sampled for raw and treated water and the Strange Street well supply was sampled for treated water only at the reservoir. The Kitchener Well Supply locations were sampled for the presence of approximately 180 parameters on a monthly basis. Samples for Specific Pesticide and Chlorophenol analysis were taken in June and November only. Polyaromatic Hydrocarbons and Phenolics are only analyzed in the raw and treated water at the plant. As of August 1989, the analysis of Triazine pesticides was dropped from the distribution sample. Laboratory analysis was conducted at the Ministry of the Environment facilities in Rexdale, Ontario.

RESULTS

Field Chemistry measurements were recorded on the day of sampling and were entered on the DWSP database as submitted by plant personnel.

Table 3 contains information on the sample day retention time, flow rate and chlorine dosages.

Table 4 is a summary break-down of the number of water samples analyzed by parameter and by water type. The number of times that a positive or trace result was detected is also reported.

Positive denotes that the result is greater than the statistical limit of detection established by the Ministry of the Environment (MOE) laboratory staff and is quantifiable. Trace (<T) denotes that the level measured is greater than the lowest value detectable by the method but lies so close to the detection limit that it cannot be confidently quantified.

Table 5 presents the results for parameters detected on at least one occasion.

Table 6 lists all parameters analyzed in the DWSP.

Associated guidelines and detection limits are also supplied on tables 5 and 6. Parameters are listed alphabetically within each scan.

DISCUSSION

General

Water quality is judged by comparison with the Ontario Drinking Water Objectives (ODWOS) as defined in the 1984 publication (ISBN

0-7743-8985-0). The Province of Ontario has health related and aesthetic objectives for 49 parameters. These are currently under review. When an ODWO is not available, guidelines/limits from other agencies are consulted. The Parameters Listing System (PALIS), recently published (ISBN 0-7729-4461-X) by the MOE, catalogues and keeps current over 1750 guidelines for 650 parameters from agencies throughout the world.

Many of the compounds detected are naturally occurring or are treatment by-products.

IN THIS REPORT, DISCUSSION IS LIMITED TO THE TREATED AND DISTRIBUTED WATER AND ADDRESSES ONLY THOSE PARAMETERS WITH CONCENTRATIONS ABOVE GUIDELINE VALUES AND ORGANIC PARAMETERS WITH POSITIVE RESULTS.

Inorganic and Physical

Colour

The aesthetic ODWO of 5.0 True Colour Units (TCU) was exceeded six times in the K70 treated samples to a maximum of 6.5 TCU.

Hardness

The aesthetic ODWO for hardness indicates that a level of between 80 and 100 mg/L as the equivalent quantity of calcium carbonate is appropriate and water supplies with a hardness greater than 200

mg/L is considered poor. Hardness values at the Kitchener supplies are consistently above 200 mg/L and range to a high of 490 mg/L.

Other parameters associated with hardness, calcium, magnesium and conductivity are also above the respective aesthetic limits.

Iron

Iron values exceeded the ODWO maximum desirable concentration (MDC) of 300 µg/L in one distribution sample in September at 370 µg/L.

Manganese

Manganese values exceeded the ODWO Maximum Desirable Concentration (MDC) of 50 µg/L in twenty-two treated and distribution samples to a high of 260 µg/L.

Organic Parameters

Atrazine

Atrazine was reported at positive levels two times in the K70 treated water to a maximum of 550 ng/L. Health and Welfare Canada has an interim Maximum Acceptable Concentration (IMAC) for Atrazine in drinking water of 60,000 ng/L.

1,1 Dichloroethane

1,1 Dichloroethane was reported at 1.2 ng/L in the September distribution sample. There is no drinking water guideline

available.

1,1,1-Trichloroethane

1,1,1-Trichloroethane was reported in all twelve treated samples from the Strange Street Reservoir. All values, ranging from .72 ug/L to 1.04 ug/L were below the United States Environmental Protection Agency's Maximum Contaminant Level (MCL) for 1,1,1-Trichloroethane in drinking water of 200 ug/L.

Trihalomethanes

Trihalomethanes (THMs) are acknowledged to be produced during the water treatment process and will always occur in chlorinated surface waters. THMs are comprised of Chloroform chlorodibromomethane, and dichlorobromomethane. Bromoform occurs occasionally. Results are reported for the individual compounds as well as for the total THMs. All Total THM occurrences in the treated and distributed samples, ranging from traces to 28.7 ug/L, were well below the ODWO of 350 ug/L.

CONCLUSIONS

The repeated finding of quantifiable levels of 1,1,1-Trichloroethane and traces of Trichloroethylene in the Strange Street Reservoir indicates low level contamination of the reservoir through one or more of its source wells.

The frequency of Atrazine detected in the K70 samples suggests that the source of this contaminant is the Grand River.

The results listed in this report for 1989 are consistent with results reported for previous years.

The Regional Municipality of Waterloo is presently addressing the comments made in the conclusion of the 1988 DWSP annual report. A water treatment facility is under construction.

The treated water was generally of good quality and this was maintained in the distribution system.

TABLE 3

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1989

DATE	SAMPLE DAY CONDITIONS		TREATMENT CHEMICAL DOSAGES (MG/L)			
	K21 (MANNHEIM) DELAY *	FLOW TIME(HRS)	K70 RECHARGE WELL PRE-CHLORINATION SODIUM HYPOCHLORITE (1000M3)	DELAY * TIME(HRS)	K70 RECHARGE WELL PRE-CHLORINATION SODIUM HYPOCHLORITE (1000M3)	---
JAN 17	.5	29.3	00.72	.3	2.7	00.76
FEB 14	.5	28.9	00.76	.2	2.8	00.72
MAR 21	.2	29.4	04.05	.2	2.7	01.26
APR 18	.3	32.8	04.55	.5	2.1	00.76
MAY 16	.4	35.6	04.05	.2	2.5	00.76
JUN 20	.6	37.9	02.40	.3	2.4	00.79
JUL 18	.5	39.0	02.52	.3	2.8	00.66
AUG 22					2.8	00.47
AUG 23	.4	36.1	01.95	*	*	*
SEP 19	.5	36.4	02.40	.3	2.5	00.69
OCT 17	.4	34.8	02.02	.2	2.7	00.51
NOV 21	.3	36.9	02.02	.4	2.8	00.24
DEC 19	.3	33.4	01.39	.3	3.0	00.54

* THE DELAY TIME BETWEEN THE RAW AND TREATED WATER SAMPLING, SHOULD ESTIMATE THE RETENTION TIME

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			MANNHEIM RESERVOIR			TOTAL POSITIVE TRACE			SITE 1 TOTAL POSITIVE TRACE		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
BACTERIOLOGICAL	FECAL COLIFORM MF	12	1	0	-	12	1	0	12	-	3	0	1	0	0	1	0	0	0	12	7	0
	STANDRD PLATE CNT MF	-	-	-	12	4	0	12	0	0	12	1	0	0	0	12	0	0	12	0	0	0
	TOTAL COLIFORM MF	12	4	0	12	0	0	12	0	0	12	0	0	0	0	12	0	0	12	0	0	0
	T COLIFORM BKGRO MF	12	4	0	12	0	0	12	3	0	12	1	0	0	0	12	0	0	12	0	3	0
*TOTAL SCAN BACTERIOLOGICAL		36	9	0	36	1	0	36	7	0	36	1	0	0	36	0	0	36	0	36	10	0
*TOTAL GROUP BACTERIOLOGICAL		36	9	0	36	1	0	36	7	0	36	1	0	0	36	0	0	36	0	36	10	0
CHEMISTRY (FLD)	FLD CHLORINE (COMB)	-	-	-	12	12	0	11	9	0	1	0	0	0	8	5	0	17	3	0		
	FLD CHLORINE FREE	-	-	-	12	12	0	11	6	0	1	0	0	0	8	4	0	15	1	0		
	FLD CHLORINE (TOTAL)	-	-	-	12	12	0	12	9	0	1	0	0	0	10	8	0	17	3	0		
	FLD PH	12	12	0	12	12	0	12	12	0	11	11	0	12	11	0	12	22	22	0		
	FLD TEMPERATURE	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	12	22	22	0		
*TOTAL SCAN CHEMISTRY (FLD)		24	24	0	60	60	0	58	48	0	26	23	0	50	40	0	93	51	0			
CHEMISTRY (LAB)	ALKALINITY	12	12	0	12	12	0	12	0	12	0	12	0	12	12	0	24	24	0			
	CALCIUM	12	12	0	12	12	0	12	0	12	0	12	0	12	12	0	24	24	0			
	CYANIDE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	CHLORIDE	12	12	0	12	12	0	12	0	12	0	12	0	12	12	0	24	24	0			
	COLOUR	12	12	0	12	11	1	12	5	7	12	0	9	12	0	10	24	10	14	0		
	CONDUCTIVITY	12	12	0	12	12	0	12	0	12	0	12	0	12	12	0	24	24	0			

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			MANNHEIM RESERVOIR			SITE 1		
			TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
CHEMISTRY (LAB)	FLUORIDE	12	12	0	12	12	0	12	11	1	12	12	0	12	10	2	24	0	24	0
	HARDNESS	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	0	24	0
	IONICAL	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	0	24	0
	LANGEIERS INDEX	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	0	24	0
	MAGNESIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	0	24	0
	SODIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	0	24	0
	AMMONIUM TOTAL	12	4	2	12	3	3	12	2	3	12	0	2	12	0	2	24	1	7	
	NITRITE	12	2	0	12	3	8	12	1	11	12	0	12	12	0	1	10	24	7	
	TOTAL NITRATES	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	0	23	1
	NITROGEN TOT KJELD	12	12	0	12	12	0	12	12	4	8	12	0	12	12	1	11	24	17	7
	PH	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	0	24	0
	PHOSPHORUS FIL REACT	12	0	7	12	2	5	12	0	8	12	0	6	12	0	6	24	1	7	
	PHOSPHORUS TOTAL	12	0	11	12	0	11	12	0	10	12	0	7	12	0	9	24	1	7	
	SULPHATE	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	0	24	0
	TURBIDITY	12	9	3	12	9	3	12	12	0	12	11	1	12	11	1	24	23	1	
*TOTAL SCAN CHEMISTRY (LAB)		252	195	33	252	196	31	252	179	48	252	179	37	252	167	51	444	369	47	
METALS		SILVER	12	0	3	12	0	2	12	0	3	12	0	5	12	0	2	24	0	10
		ALUMINUM	12	12	0	12	12	0	12	12	0	12	0	12	12	0	24	0	24	0
		ARSENIC	12	0	11	12	0	12	12	5	7	12	0	11	12	0	10	24	7	15
		BARIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	0	24
		BORON	12	12	0	12	12	0	12	12	0	12	11	1	12	11	1	24	22	2

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			MANNHEIM RESERVOIR			TOTAL POSITIVE TRACE			SITE 1 TOTAL POSITIVE TRACE		
			TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
METALS																							
BERYLLIUM	12	0	11	12	1	9	12	2	9	12	1	10	12	1	9	24	1	20					
CADMIUM	12	0	4	12	0	6	12	0	8	12	0	3	12	0	2	24	0	13					
COBALT	12	0	9	12	0	8	12	0	12	12	0	6	12	0	4	24	0	10					
CHROMIUM	12	11	0	12	10	2	12	11	1	12	11	0	12	11	1	24	22	0					
COPPER	12	11	1	12	12	0	12	11	1	12	0	12	12	0	12	11	1	24	0				
IRON	12	0	1	12	0	0	12	0	12	0	0	0	0	0	0	7	24	14	6				
MERCURY	12	1	4	12	0	5	12	1	4	12	1	4	12	1	5	12	0	6					
MANGANESE	12	12	0	12	11	1	12	12	0	12	12	0	12	12	0	24	24	0					
MOLYBDENUM	12	12	0	12	12	0	12	11	1	12	12	0	12	11	1	24	23	1					
NICKEL	12	1	8	12	2	6	12	2	6	12	3	2	12	3	2	24	12	6					
LEAD	12	9	3	12	0	12	0	6	6	12	6	4	12	5	6	24	23	1					
ANTHONY	12	11	1	12	11	1	12	11	1	12	11	1	12	11	1	24	22	2					
SELENIUM	12	0	6	12	0	10	12	0	9	12	0	6	12	0	7	24	0	16					
STRONTIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0					
TITANIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0					
THALLIUM	12	0	6	12	0	8	12	0	9	12	0	8	12	1	4	24	0	9					
URANIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0					
VANADIUM	12	1	11	12	0	12	12	4	8	12	0	12	12	0	12	24	2	22					
ZINC	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0					
*TOTAL SCAN METALS	288	153	79	288	155	82	288	172	83	288	140	85	288	150	73	564	340	139					
*TOTAL GROUP INORGANIC & PHYSICAL	564	372	112	600	411	113	598	399	131	566	342	122	590	357	124	1101	760	186					
CHLORAROMATICS																							
HEXACHLOROBUTADIENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0	0	0	0	0	0

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1998)

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

PAH SCAN	PARAMETER	SITE	K70 RAW	K70 TREATED	STRANGE ST RESERVOIR	K21 RAW	MANNHEIM RESERVOIR	TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE	SITE 1 TOTAL POSITIVE TRACE
			TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE	SITE 1 TOTAL POSITIVE TRACE
PHENANTHRENE	12	0	0	12	0	0	12	0	0	12
ANTHRACENE	12	0	0	12	0	0	12	0	0	12
FLUORANTHENE	12	0	0	12	0	0	12	0	0	12
PYRENE	12	0	0	12	0	0	12	0	0	12
BENZO(A)ANTHRACENE	12	0	0	12	0	0	12	0	0	12
CHRYSENE	12	0	0	12	0	0	12	0	0	12
DIMETH. BENZ(A)ANTHR	5	0	0	5	0	4	0	4	0	4
BENZO(E) PYRENE	12	0	0	12	0	0	12	0	0	12
BENZO(B) FLUORANTHEN	12	0	0	12	0	0	12	0	0	12
PERYLENE	12	0	0	12	0	0	12	0	0	12
BENZO(C) FLUORANTHEN	12	0	0	12	0	0	12	0	0	12
BENZO(A) PYRENE	7	0	0	7	0	0	7	0	0	7
BENZO(G,H,I) PERYLEN	12	0	0	12	0	0	12	0	0	12
DIBENZO(A,H) ANTHRAC	12	0	0	12	0	0	12	0	0	12
INDENO(1,2,3-C,D) PY	12	0	0	12	0	0	12	0	0	12
BENZO(B) CHRYSENE	12	0	0	12	0	0	12	0	0	12
CORONENE	12	0	0	12	0	0	12	0	0	12
*TOTAL SCAN PAH	192	0	0	192	0	0	191	0	0	191
PESTICIDES & PCB	ALDRIN	11	0	11	0	0	12	0	0	12
	ALPHA BHC	11	0	11	0	0	12	0	0	12
	BETA BHC	11	0	11	0	0	12	0	0	12

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE	K70 RAW	K70 TREATED		STRANGE ST RESERVOIR		MANNHEIM RESERVOIR		K21 RAW		MANNHEIM RESERVOIR		TOTAL POSITIVE TRACE									
			TOTAL POSITIVE TRACE																				
PESTICIDES & PCB	LINDANE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0		
	ALPHA CHLORDANE	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	GAMMA CHLORDANE	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	DIELDRIN	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	METHOXYCHLOR	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	ENDOSULFAN 1	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	ENDOSULFAN 11	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	ENDRIN	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	ENDOSULFAN SULPHATE	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	HEPTACHLOR EPICLORIDE	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	HEPTACHLOR	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	MIREX	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	OXYCHLORDANE	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	OPDDT	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	PCB	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	DDD	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	PPDDE	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	PPDDT	11	0	0	11	0	0	0	11	0	0	12	0	0	11	0	0	12	0	0	12	0	
	AMETRINE	12	0	0	12	0	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	
	ATRAZINE	12	2	6	12	0	0	2	6	12	0	0	12	0	0	12	0	0	12	0	0	12	0
	ATRATONE	12	0	0	12	0	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	
	CYANAZINE (BLADEX)	12	0	0	12	0	0	0	12	0	0	12	0	0	12	0	1	12	0	0	12	0	
	D-ETHYL ATRAZINE	12	0	4	12	0	0	5	12	0	0	12	0	0	12	0	0	12	0	0	12	0	
	D-ETHYL SIMAZINE	12	0	0	12	0	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE	K70 RAW	K70 TREATED		STRANGE ST RESERVOIR		K21 RAW		MANNHEIM RESERVOIR		TOTAL POSITIVE TRACE		TOTAL POSITIVE TRACE		TOTAL POSITIVE TRACE		SITE 1		
			TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	
PESTICIDES & PCB	PROMETONE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0	
	PROPRAZINE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0	
	PROMETRYNE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0	
	METRIBUZIN (SENCOR)	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0	
	SIMazine	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0	
	ALACHLOR (CLASO)	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0	
	NETOLACHLOR	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0	
*TOTAL SCAN PESTICIDES & PCB		387	2	10	387	2	11	387	0	1	408	0	1	387	0	0	343	0	0	
PHENOLICS		12	7	4	12	6	5	12	4	5	12	3	5	12	4	5	-	-	-	
*TOTAL SCAN PHENOLICS		12	7	4	12	6	5	12	4	5	12	3	5	12	4	5	0	0	0	
SPECIFIC PESTICIDES		TOXAPHENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	2,4,5-T	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	-	-	-	
	2,4-D	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	-	-	-	
	2,4-OB	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	-	-	-	
	2,4 D PROPIONIC ACID	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	-	-	-	
	DICAMBA	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	-	-	-	
	PICHLORAM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	
	SILVERX	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	-	-	-	

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

TABLE 4

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			MANNHEIM RESERVOIR		
			TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
SPECIFIC PESTICIDES	DIAZINON	2	0	0	2	0	0	2	0	0	2	0	0	2
	DICHLOROVOX	2	0	0	2	0	0	2	0	0	2	0	0	2
	CHLORPYRIFOS	2	0	0	2	0	0	2	0	0	2	0	0	2
	ETHION	2	0	0	2	0	0	2	0	0	2	0	0	2
	AZIMPHOS-METHYL	0	0	0	0	0	0	0	0	0	0	0	0	0
	MALATHION	2	0	0	2	0	0	2	0	0	2	0	0	2
	HEVINPHOS	2	0	0	2	0	0	2	0	0	2	0	0	2
	METHYL PARATHION	2	0	0	2	0	0	2	0	0	2	0	0	2
	METHYLTRITHION	2	0	0	2	0	0	2	0	0	2	0	0	2
	PARATHION	2	0	0	2	0	0	2	0	0	2	0	0	2
	PHORATE	2	0	0	2	0	0	2	0	0	2	0	0	2
	RELDAN	2	0	0	2	0	0	2	0	0	2	0	0	2
	RONNEL	2	0	0	2	0	0	2	0	0	2	0	0	2
	AMINOCARB	0	0	0	0	0	0	0	0	0	0	0	0	0
	BENONYL	1	0	0	1	0	0	1	0	0	1	0	0	1
	BUX	0	0	0	0	0	0	0	0	0	0	0	0	0
	CARBOFURAN	2	0	0	2	0	0	2	0	0	2	0	0	2
	CIPC	2	0	0	2	0	0	2	0	0	2	0	0	2
	DIALLATE	2	0	0	2	0	0	2	0	0	2	0	0	2
	EPTAM	2	0	0	2	0	0	2	0	0	2	0	0	2
	IPC	2	0	0	2	0	0	2	0	0	2	0	0	2
	PROPOUR	2	0	0	2	0	0	2	0	0	2	0	0	2
	CARBARYL	2	0	0	2	0	0	2	0	0	2	0	0	2
	BUTYLATE	2	0	0	2	0	0	2	0	0	2	0	0	2

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITSUJI UENO

SUMMARY TABLE OF 888III TS (10880)

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

KEY TO TABLE 5 and 6

- A ONTARIO DRINKING WATER OBJECTIVES (ODWO)
1. Maximum Acceptable Concentration (MAC)
 - 1+. MAC for Total Trihalomethanes
 - 1*. MAC for Bacteriological Analyses
 - Poor water quality is indicated when :
 - total coliform counts > 0 < 5
 - P/A Bottle Test is present after 48 hours
 - Aeromonas organisms are detected in more than 25% of samples in a single submission or in successive submissions from the same sampling site
 - Pseudomonas Aeruginosa, Staphylococcus Aureus and members of the Fecal Streptococcus group should not be detected in any sample
 - Standard Plate Count should not exceed 500 organisms per ml at 35 °C within 48 hours
 2. Interim Maximum Acceptable Concentration (IMAC)
 3. Maximum Desirable Concentration (MDC)
 4. Aesthetic or Recommended Operational Guideline
 - hardness levels between 80 and 100 mg/L as calcium carbonate are considered to provide an acceptable balance between corrosion and incrustation, water supplies with a hardness >200 mg/L are considered poor and those in excess of 500 mg/L are unacceptable.
- B HEALTH & WELFARE CANADA (H&W)
1. Maximum Acceptable Concentration (MAC)
 2. Proposed MAC
 3. Interim MAC
 4. Aesthetic Objective (AO) (for xylenes, a total)
- C WORLD HEALTH ORGANIZATION (WHO)
1. Guideline Value (GV)
 2. Tentative GV
 3. Aesthetic GV
- D US ENVIRONMENTAL PROTECTION AGENCY (EPA)
1. Maximum Contaminant Level (MCL)
 2. Suggested No-Adverse Effect Level (SNAEL)
 3. Lifetime Health Advisory
 4. EPA Ambient Water Quality Criteria
 5. Maximum Contaminant Level Goal (MCLG)
- F EUROPEAN ECONOMIC COMMUNITY (EEC)
1. Health Related Guideline Level
 2. Aesthetic Guideline Level
 3. Maximum Admissible Concentration (MADC)
- G CALIFORNIA STATE DEPARTMENT OF HEALTH-GUIDELINE VALUE
- H USSR MAXIMUM PERMISSIBLE CONCENTRATION
- I NEW YORK STATE AMBIENT WATER GUIDELINE
- N/A NONE AVAILABLE

INTERPRETATION OF DATA

The interpretation of analytical results that are obtained from measurements near the limit of detection of the measurement process is subject to greater uncertainty than those at higher concentrations. The principle areas of concern relate to whether the substance has actually been detected, whether it has been properly identified, and whether it is an artifact of the measurement process. In other words, false positives can be caused by the instrumentation or the test procedures used, when in fact these compounds are not present in the sample.

There are several methods to treat data from such measurements:

1. Exclude the low-level data because of this uncertainty factor. Studies of long-term environmental trends and modelling may however, be adversely affected by the exclusion of such data.
2. Qualify these data so the user is aware of the greater uncertainty associated with their use.

For the Drinking Water Surveillance Program, measurements near the limit of detection of the measurement process are reported with the code "<T". Results qualified by "W" indicate a zero measurement. These results are reported for purposes of modelling and long-term trend analysis and no significance should be attributed to a single determination of a substance below "T" (a single determination may well be a false positive). Repeat analysis or additional data are needed before it can be stated with certainty that the substance in question was truly present. On the other hand, it is less likely that repeated detection of a substance at or near the limit of detection at a specific location is solely due to an artifact in the measurement system, and more likely represents a true positive. The average of such data however, is still only an estimate of the amount of substance present subject to the possible biases of the method used.

LABORATORY RESULTS, REMARK DESCRIPTIONS

.	No Sample Taken
BDL	Below Minimum Measurable Amount
<T	Greater Than Detection Limit But Not Confident (SEE INTERPRETATION OF RESULTS ABOVE)
>	Results Are Greater Than The Upper Limit
<=>	Approximate Result
!CS	No Data: Contamination Suspected
!IL	No Data: Sample Incorrectly Labelled
!IS	No Data: Insufficient Sample
!IV	No Data: Inverted Septum
!LA	No Data: Laboratory Accident
!LD	No Data: Test Queued After Sample Discarded

!IS	No Data: Insufficient Sample
!LA	No Data: Laboratory Accident
!LD	No Data: Test Queued After Sample Discarded
!NA	No Data: No Authorization To Perform Reanalysis
!NP	No Data: No Procedure
!NR	No Data: Sample Not Received
!OP	No Data: Obscured Plate
!QU	No Data: Quality Control Unacceptable
!PE	No Data: Procedural Error - Sample Discarded
!PH	No Data: Sample pH Outside Valid Range
!RE	No Data: Received Empty
!RO	No Data: See Attached Report (no numeric results)
!SM	No Data: Sample Missing
!SS	No Data: Send Separate Sample Properly Preserved
!UI	No Data: Indeterminant Interference
!TX	No Data: Time Expired
A3C	Approximate, Total Count Exceeded 300 Colonies
APL	Additional Peak, Large, Not Priority Pollutant
APS	Additional Peak, Less Than, Not Priority Pollutant
CIC	Possible Contamination, Improper Cap
CRO	Calculated Result Only
PPS	Test Performed On Preserved Sample
RMP	P and M-Xylene Not Separated
RRV	Rerun Verification
RVU	Reported Value Unusual
SPS	Several Peaks, Small, Not Priority Pollutant
UCR	Unreliable: Could Not Confirm By Reanalysis
UCS	Unreliable: Contamination Suspected
UIN	Unreliable: Indeterminant Interference
XP	Positive After X Number of Hours

T# (T06) Result Taken After # Hours

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1989

TYPE	K21 RAW	MANNHEIM RESERVOIR	STANDING	FREE FLOW	K70 RAW	K70 TREATED
	GUIDELINE = 0 (A1)					
BACTERIOLOGICAL						
FECAL COLIFORM MF (CT/100ML)						
	DET'N LIMIT = 0					
JAN	0 T06	-	-	-	0 T06	-
FEB	0 T24	-	-	-	0 T24	-
MAR	0 T06	-	-	-	0 T06	-
APR	0 T24	-	-	-	0 T24	-
MAY	0	-	-	-	0	-
JUN	0	-	-	-	0	-
JUL	0	-	-	-	0	-
AUG	0	-	-	-	0	-
SEP	0	-	-	-	0	-
OCT	0	-	-	-	0	-
NOV	0	-	-	-	1	-
DEC	0	-	-	-	0	-
STANDRO PLATE CNT MF (CT/ML)						
	DET'N LIMIT = 0					
		GUIDELINE = 500/ML (A1)				
JAN	3 <= >	-	-	5 <= >	0 <= >	2 <= >
FEB	0 <= >	-	-	51 T24	0 <= >	0 <= >
MAR	4 <= >	-	-	5 <= >	3 <= >	3 <= >
APR	1 <= >	-	-	1 <= >	0 <= >	3 <= >
MAY	0 <= >	-	-	2 <= >	1 <= >	6 <= >
JUN	0 <= >	-	-	145	29	1 <= >
JUL	1 <= >	-	-	22	11	0 <= >
AUG	1 <= >	-	-	19	10	1 <= >
SEP	3 <= >	-	-	420	-	6 <= >
OCT	4 <= >	-	-	50	9 <= >	1 <= >
NOV	0 <= >	-	-	44	1 <= >	5 <= >
DEC	-	-	-	0 <= >	0 <= >	19

K70 TREATED

K70 RAW

STRANGE ST RESERVOIR

K21 RAW MANNHEIM RESERVOIR

STANDING

SITE 1

FREE FLOW

TOTAL COLIFORM MF (CT/100ML)

	K21 RAW	MANNHEIM RESERVOIR	STANDING	SITE 1	FREE FLOW
JAN	0 T06	0 T06	*	0 T06	0 T06
FEB	0 T24	0 T24	*	0 T24	0 T24
MAR	0 T06	0 T06	*	0 T06	0 T06
APR	0 T24	0 T24	*	0 T24	0 T24
MAY	0	0	*	0	0
JUN	0	0	*	0	0
JUL	0	0	*	0	0
AUG	0	0	*	0	0
SEP	0	0	*	0	0
OCT	0	0	*	0	0
NOV	0	0	*	0	0
DEC	0	0	*	0	0

T COLIFORM BCKGRD MF (CT/100ML)

	K21 RAW	MANNHEIM RESERVOIR	STANDING	SITE 1	FREE FLOW
JAN	0 T06	0 T06	*	25 T06	0 T06
FEB	0 T24	0 T24	*	0 T24	0 T24
MAR	0 T06	0 T06	*	0 T06	0 T06
APR	0 T24	0 T24	*	0 T24	0 T24
MAY	0	0	*	0	0
JUN	0	0	*	1	0
JUL	0	0	*	0	0
AUG	0	0	*	1	0
SEP	1	0	*	0	0
OCT	0	0	*	0	0
NOV	0	0	*	0	0
DEC	0	0	*	0	0

T COLIFORM BCKGRD MF (CT/100ML)

	K21 RAW	MANNHEIM RESERVOIR	STANDING	SITE 1	FREE FLOW
JAN	0 T06	0 T06	*	0 T06	0 T06
FEB	0 T24	0 T24	*	0 T24	0 T24
MAR	0 T06	0 T06	*	0 T06	0 T06
APR	0 T24	0 T24	*	0 T24	0 T24
MAY	0	0	*	0	0
JUN	0	0	*	1	0
JUL	0	0	*	0	0
AUG	0	0	*	1	0
SEP	1	0	*	0	0
OCT	0	0	*	0	0
NOV	0	0	*	0	0
DEC	0	0	*	0	0

	K21 RAW	MANNHEIM RESERVOIR	STANDING	SITE 1	FREE FLOW
JAN	0 T06	0 T06	*	0 T06	0 T06
FEB	0 T24	0 T24	*	0 T24	0 T24
MAR	0 T06	0 T06	*	0 T06	0 T06
APR	0 T24	0 T24	*	0 T24	0 T24
MAY	0	0	*	0	0
JUN	0	0	*	1	0
JUL	0	0	*	0	0
AUG	0	0	*	1	0
SEP	1	0	*	0	0
OCT	0	0	*	0	0
NOV	0	0	*	0	0
DEC	0	0	*	0	0

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW		
CHEMISTRY (FLD)						
FLO CHLORINE (COMB) (MG/L)			DET'N LIMIT = N/A	GUIDELINE = N/A		
JAN	-	-	-	-	.100	.100
FEB	-	-	-	-	.100	.100
MAR	.100	.100	.100	.100	.100	.100
APR	.000	.100	.100	.100	.100	.100
MAY	.200	.100	.100	.100	.100	.200
JUN	.100	.000	.000	.000	.010	.300
JUL	.200	.000	.000	.000	.100	.200
AUG	.000	.000	.000	.000	.000	.100
SEP	.100	.000	.000	.000	.100	.300
OCT	.000	.000	.000	.000	.100	.300
NOV	.000	.000	.000	.000	.000	.200
DEC	.000	.000	.000	.000	.000	.200
FLO CHLORINE FREE (MG/L)						
			DET'N LIMIT = N/A	GUIDELINE = N/A		
JAN	-	-	-	-	.100	.600
FEB	-	-	-	-	.100	.600
MAR	.300	.300	.100	.100	.200	.700
APR	.300	.100	.000	.000	.400	.600
MAY	.200	.000	.000	.000	.200	.400
JUN	.000	.000	.000	.000	.010	.400
JUL	.000	.000	.000	.000	.000	.300
AUG	.000	.000	.000	.000	.000	.300
SEP	.000	.000	.000	.000	.000	.100
OCT	.000	.000	.000	.000	.000	.400
NOV	.000	.000	.000	.000	.000	.300
DEC	.000	.000	.000	.000	.000	.100
FLO CHLORINE (TOTAL) (MG/L)						
			DET'N LIMIT = N/A	GUIDELINE = N/A		
JAN	-	.100	-	-	.200	.700
FEB	-	.100	-	-	.200	.700
MAR	.400	.100	.200	.300	.300	.800
APR	.300	.100	.100	.500	.300	.700
MAY	.300	.000	.000	.300	.020	.600
JUN	.300	.000	.000	.100	.100	.700
JUL	.200	.000	.000	.000	.000	.600
AUG	.000	.000	.000	.000	.000	.400
SEP	.100	.000	.000	.000	.100	.400
OCT	.000	.000	.000	.000	.100	.700
NOV	.000	.000	.000	.000	.000	.500
DEC	.000	.000	.000	.000	.000	.300

SITE	K21 RAW	MANNHEIM RESERVOIR	STANDING	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
FLD PH (DRNSLESS)			DETIN LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)		
JAN	7.300	7.500	7.500	7.300	7.500	7.500	7.500
FEB	7.300	7.400	7.500	7.300	7.100	7.300	7.500
MAR	7.500	7.500	7.500	7.400	7.300	7.500	7.500
APR	7.300	7.500	7.500	7.400	7.300	7.300	7.500
MAY	7.500	7.300	.	7.500	7.300	7.500	7.500
JUN	7.300	7.500	7.500	7.500	7.300	7.300	7.500
JUL	7.500	7.500	7.500	7.500	7.300	7.500	7.500
AUG	.	.000	7.500	7.500	7.300	7.500	7.400
SEP	7.500	7.500	7.500	7.400	7.300	7.400	7.400
OCT	7.500	7.500	7.500	7.500	7.500	7.500	7.500
NOV	7.500	7.500	7.500	7.500	7.100	7.500	7.500
DEC	7.300	7.500	7.500	7.500	7.300	7.300	7.500

FLD TEMPERATURE (DEG.C)			DETIN LIMIT = N/A		GUIDELINE = 15 (A1)		
JAN	8.500	8.000	17.000	9.000	9.000	9.000	8.000
FEB	9.000	8.000	16.000	8.000	9.000	8.000	7.000
MAR	9.000	8.000	15.000	8.000	10.000	8.000	5.000
APR	9.000	13.000	15.000	8.000	9.000	15.000	15.000
MAY	9.000	10.000	18.000	.	14.000	7.000	8.000
JUN	9.000	9.000	18.000	13.000	10.000	11.000	11.000
JUL	9.000	9.000	20.000	14.000	10.000	13.000	14.000
AUG	9.000	9.000	20.000	16.000	10.000	16.000	15.000
SEP	9.000	9.000	16.000	16.000	10.000	16.000	16.000
OCT	9.000	8.000	18.000	15.000	10.000	14.000	15.000
NOV	8.000	8.000	18.000	13.000	9.000	12.000	12.000
DEC	8.000	8.000	15.000	9.000	8.000	10.000	9.000

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW		
CHEMISTRY (LAB)						
ALKALINITY (MG/L)		DET'N LIMIT = .200		GUIDELINE = 30-500 (A4)		
JAN	286.300	278.700	336.300	316.900	336.000	233.100
FEB	281.200	269.700	328.900	299.900	331.800	231.600
MAR	241.100 USD	245.000 USD	239.000 USD	239.600 USD	224.300	232.300
APR	273.500	263.500	321.900	295.700	326.600	235.600
MAY	268.500	259.200	249.700	253.100	217.500	219.000
JUN	247.200	243.200	276.700	236.000	315.800	225.400
JUL	277.100	272.900	280.200	278.200	301.200	226.400
AUG	271.500	266.000	298.200	265.100	329.000	227.900
SEP	272.000	266.400	295.900	292.000	315.400	217.000
OCT	282.000	273.100	300.600	322.000	326.500	209.400
NOV	282.600	272.100	315.700	271.400	321.000	210.500
DEC	244.800	264.500	271.300	274.300	313.400	214.700
			245.600	305.600	218.400	223.100
CALCIUM (MG/L)						
		DET'N LIMIT = .100		GUIDELINE = 100 (F2)		
JAN	89.000	92.000	137.000	121.000	130.000	79.600
FEB	91.800	96.200	145.000	118.000	128.000	79.800
MAR	89.200	97.200	107.000	105.000	124.000	81.000
APR	85.800	91.200	147.000	125.000	134.000	83.200
MAY	90.800	91.800	94.400	96.000	131.000	77.600
JUN	90.000	96.600	148.000	98.000	130.000	76.800
JUL	90.400	95.200	104.000	101.000	134.000	79.400
AUG	90.400	95.200	144.000	99.000	132.000	75.600
SEP	90.600	97.600	130.000	138.000	130.000	70.000
OCT	92.800	98.400	143.000	101.000	134.000	70.000
NOV	89.600	92.500	146.000	93.000	129.000	71.200
DEC	89.100	92.500	91.000	91.400	133.200	71.600
					76.000	76.900
CHLORIDE (MG/L)						
		DET'N LIMIT = .200		GUIDELINE = 250 (A3)		
JAN	16.500	20.300	104.000	73.900	87.900	41.900
FEB	16.500	21.000	97.000	64.000	86.600	42.500
MAR	16.000	20.000	31.700	35.800	86.500	37.700
APR	15.400	19.800	107.000	67.600	87.800	48.600
MAY	15.300	20.000	19.700	19.800	91.200	49.400
JUN	15.900	22.700	96.200	29.700	92.600	33.900
JUL	16.000	22.000	31.000	25.000	89.300	36.100
AUG	16.200	21.000	99.500	25.000	87.500	34.600
SEP	16.400	20.500	78.400	92.200	90.000	34.900
OCT	16.300	21.200	99.400	30.400	89.700	37.400
NOV	16.200	20.200	100.000	20.900	89.900	36.900
DEC	16.500	19.600	19.500	19.500	89.400	32.700
						32.800

SITE	K21 TYPE	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
COLOUR (HUE)		DET'N LIMIT = .5		GUIDELINE = 5.0 (A3)		
JAN	BOL	BOL	3,000	1,500 <1	4,000	3,000
FEB	BOL	BOL	4,000	1,500 <1	3,500	2,000 <1
MAR	1,000 <1	1,000 <1	1,500 <1	1,500 <1	4,000	3,000
APR	.500 <1	.500 <1	3,500	3,000	4,500	3,500
MAY	1,000 <1	1,000 <1	1,000 <1	1,000 <1	5,000	4,000
JUN	.500 <1	1,000 <1	3,500	1,000 <1	5,000	5,500
JUL				2,000 <1	5,500	
AUG	.500 <1	.500 <1	3,000	.500 <1	1,500 <1	6,500
SEP	.500 <1	.500 <1	2,500	1,000 <1	7,000	6,500
OCT	.500 <1	1,000 <1	4,000	1,000 <1	5,500	5,500
NOV	.500 <1	.500 <1	4,000	.500 <1	1,500 <1	6,000
DEC	.500 <1	.500 <1	.500 <1	.500 <1	2,000 <1	6,000
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CONDUCTIVITY (MHO/CM)		DET'N LIMIT = 1		GUIDELINE = 400 (F2)		
JAN	642	659	1175	997	1044	669
FEB	642	657	1173	947	1040	659
MAR	588	622	700	717	962	697
APR	640	652	1184	968	1049	617
MAY	619	629	622	625	1020	653
JUN	591	630	1089	656	1007	612
JUL	626	656	725	686	1025	598
AUG	616	637	1116	662	995	572
SEP	627	652	1009	1077	1032	586
OCT	645	671	1154	728	1043	593
NOV	640	657	1157	668	1023	593
DEC	585	639	655	617	1015	606
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FLUORIDE (MG/L)		DET'N LIMIT = .01		GUIDELINE = 2,400 (A1)		
JAN	.120	.080	.160	.100	.080	.120
FEB	.120	.080	.100	.100	.080	.160
MAR	.100	.060	.080	.080	.080	.100
APR	.080	.060	.100	.060	.100	.100
MAY	.100	.080	.080	.080	.100	.120
JUN	.080	.040 <1	.060	.060	.020 <1	.060
JUL	.100	.080	.100	.080	.160	.160
AUG	.100	.080	.100	.080	.080	.140
SEP	.100	.060	.100	.080	.080	.140
OCT	.100	.040 <1	.100	.080	.100	.140
NOV	.100	.080	.100	.080	.120	.120
DEC	.080	.060	.060	.120	.160	.140

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW		
HARDNESS (MG/L)			DET'N LIMIT = .500	GUIDELINE = 80-100 (A4)		
JAN	334,000	337,000	512,000	452,000	480,000	308,000
FEB	346,000	346,000	535,000	437,000	473,000	299,000
MAR	340,000	351,000	385,000	381,000	460,000	310,000
APR	332,000	338,000	337,000	345,000	488,000	285,000
MAY	341,000	338,000	343,000	481,000	481,000	291,000
JUN	340,000	349,000	539,000	362,000	478,000	278,000
JUL	340,000	347,000	377,000	363,000	489,000	271,000
AUG	342,000	345,000	534,000	359,000	483,000	261,000
SEP	340,000	351,000	481,000	507,000	477,000	257,000
OCT	347,000	355,000	531,000	369,000	490,000	259,000
NOV	338,000	339,000	538,000	340,000	476,000	268,000
DEC	332,300	333,900	330,100	330,600	484,000	279,100

IONCAL (OMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = N/A		
JAN	3,597	4,032	5,690	3,689	1,753	.250
FEB	.234	.401	.691	2,035	1,067	2,207
MAR	11,120	10,170	14,150	10,800	8,007	2,096
APR	.271	.660	.475	1,315	1,984	.757
MAY	3,435	.998	5,289	5,875	1,573	.686
JUN	9,404	7,225	9,978	8,423	5,269	.964
JUL	1,189	.424	.316	.998	1,523	.1233
AUG	2,257	.554	3,884	2,610	3,498	1,866
SEP	1,687	2,590	2,953	3,270	4,043	.989
OCT	1,035	1,669	2,953	1,022	3,539	1,206
NOV	1,574	2,129	2,888	2,763	2,516	2,904
DEC	2,996	3,098	5,670	1,567	4,829	2,843

LANGEIERS INDEX (OMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = N/A		
JAN	.753	.755	.904	.713	.987	.694
FEB	1,098	1,060	1,239	1,121	1,125	.922
MAR	1,163	1,164	.982	1,024	1,169	1,165
APR	1,067	1,117	1,305	1,199	1,248	.985
MAY	1,255	1,274	1,230	1,213	1,365	.895
JUN	.988	1,028	1,137	1,030	1,082	1,076
JUL	1,116	1,221	1,237	1,302	1,223	1,089
AUG	1,108	1,150	1,166	1,145	1,199	1,064
SEP	1,159	1,241	1,184	1,141	1,325	1,016
OCT	1,274	1,285	1,155	1,190	1,312	1,109
NOV	1,270	1,177	1,185	1,162	1,165	1,116
DEC	1,240	1,215	1,298	1,179	1,228	1,132

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW		
MAGNESIUM (MG/L)		DET'N LIMIT = .050	GUIDELINE = .30 (F2)			
JAN	27.300	26.100	40.900	36.800	24.100	24.800
FEB	27.400	25.600	41.900	34.400	24.300	23.700
MAR	28.400	26.400	28.800	29.000	36.600	25.000
APR	28.700	26.900	41.500	35.000	37.700	21.600
MAY	27.700	26.400	26.100	26.200	37.500	22.600
JUN	28.000	26.100	41.400	28.000	37.000	21.900
JUL	27.700	26.500	28.200	27.200	37.300	20.600
AUG	28.200	26.100	42.400	27.200	37.100	20.300
SEP	27.600	26.100	37.800	39.700	37.300	20.100
OCT	28.000	26.600	42.200	28.300	37.900	20.400
NOV	27.700	26.200	42.400	26.300	37.200	21.100
DEC	26.700	25.000	25.000	24.850	36.750	21.200
SODIUM (MG/L)		DET'N LIMIT = .200	GUIDELINE = .200 (C3)			
JAN	8.800	9.200	51.200	36.200	40.200	24.000
FEB	8.600	9.000	49.800	31.600	39.400	20.600
MAR	8.600	9.000	16.800	17.600	39.800	28.000
APR	8.600	8.600	52.800	33.400	38.500	19.100
MAY	8.600	8.600	9.600	8.800	40.400	22.200
JUN	8.600	10.200	47.800	13.800	43.000	22.000
JUL	9.000	10.000	14.800	11.600	39.200	22.600
AUG	8.600	9.200	51.200	11.600	40.600	22.200
SEP	8.600	9.000	38.400	44.200	39.600	24.200
OCT	9.200	9.600	51.400	15.400	41.400	24.800
NOV	9.200	8.800	50.200	9.600	40.800	20.600
DEC	7.000	6.700	7.300	6.800	39.100	17.600
AMMONIUM TOTAL (MG/L)		DET'N LIMIT = 0.002	GUIDELINE = .05 (F2)			
JAN	.004 <1	.004 <1	.004 <1	.012	.004 <1	.002 <1
FEB	BDL	BDL	BDL	.006 <1	BDL	.002 <1
MAR	BDL	BDL	BDL	BDL	BDL	.004 <1
APR	BDL	BDL	BDL	BDL	BDL	BDL
MAY	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	BDL	BDL	BDL	BDL
JUL	.004 <1	BDL	.002 <1	.004 <1	.012	.012
AUG	BDL	BDL	.004 <1	.004 <1	.012	.030
SEP	BDL	BDL	BDL	.006 <1	.004 <1	.044
OCT	BDL	BDL	BDL	BDL	.018	.042
NOV	BDL	BDL	BDL	BDL	.018	.020
DEC	BDL	BDL	BDL	BDL	BDL	BDL

SITE		K21 RAW	HANNEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE	MATERIAL			STANDING			
DEF'N LIMIT = .001							
NITRITE (MG/L)	)				GUIDELINE = 1,000 (A1)		
JAN	.008	.002 <T	.003 <T	.003 <T	.003 <T	.003 <T	.003 <T
FEB	.009	.001 <T	.001 <T	.002 <T	.002 <T	.001 <T	.001 <T
MAR	.010	.003 <T	.005 <T	.003 <T	.003 <T	.003 <T	.004 <T
APR	.010	.002 <T	.003 <T	.003 <T	.002 <T	.003 <T	.003 <T
MAY	.006	.001 <T	.002 <T	.001 <T	.001 <T	.001 <T	.001 <T
JUN	.009	.002 <T	.005 <T	.003 <T	.003 <T	.003 <T	.003 <T
JUL	.012	.003 <T	.005 <T	.003 <T	.003 <T	.004 <T	.005 <T
AUG	.013	.007	.024	.008	.010	.007	.006
SEP	.007	.001 <T	.005 <T	.012	.002 <T	.003 <T	.003 <T
OCT	.006	.001 <T	.002 <T	.001 <T	.003 <T	.011	.001 <T
NOV	.006	BOL	.001 <T	.001 <T	.002 <T	.002 <T	.001 <T
DEC	.005	.002 <T	.004 <T	.002 <T	.003 <T	.003 <T	.006
TOTAL NITRATES (MG/L)							
JAN	.675	3.340	.220	1,250	.415	3.380	3.460
FEB	.665	3.460	.215	1,570	.415	3.110	3.090
MAR	.675	3.410	2.860	2,680	.415	3.030	3.060
APR	.645	3.150	.015 <T	1,260	.500	3.430	3.510
MAY	.660	3.160	3.080	3,080	.405	13,400	2,410
JUN	.695	4.050	.195	3,620	.395	.985	.970
JUL	.625	3.500	3.050	3,370	.385	.575	.575
AUG	.665	3.400	.170	3,380	.415	.275	.260
SEP	.655	3.270	1.120	.605	.360	.225	.245
OCT	.675	3.660	.200	3,080	.400	.380	.380
NOV	.650	3.540	.175	3,820	.410	1,830	1,840
DEC	3.600	3.560	3.490	3,510	.410	2.610	2.620
NITROGEN TOT KJELD (MG/L)							
JAN	.050 <T	.080 <T	.200	.140	.100	.300	.280
FEB	.080 <T	.090 <T	.120	.060 <T	.090 <T	.240	.250
MAR	.040 <T	.080 <T	.120	.100	.090 <T	.280	.250
APR	.050 <T	.070 <T	.090 <T	.050 <T	.090 <T	.300	.290
MAY	.070 <T	.090 <T	.100	.130	.140	.250	.250
JUN	.040 <T	.070 <T	.170	.120	.100	.260	.240
JUL	.050 <T	.080 <T	.120	.090 <T	.080 <T	.270	.250
AUG	.030 <T	.080 <T	.120	.150	.150	.280	.270
SEP	.040 <T	.070 <T	.130	.150	.070 <T	.290	.270
OCT	.040 <T	.080 <T	.120	.120	.090 <T	.240	.230
NOV	.040 <T	.150	.100	.140	.090 <T	.320	.320
DEC	.040 <T	.070 <T	.080 <T	.070 <T	.050 <T	.300	.300

SITE	K21	RAW	MANNHEIM RESERVOIR	STANDING	SITE 1	FREE FLOW	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
PH (DINLESS)				DETIN LIMIT = N/A	GUIDELINE = 6.5-8.5 (A4)				
JAN	7.820	7.820	7.740	7.620	7.840	7.900	7.990		
FEB	8.160	8.120	8.050	8.050	8.050	8.130	8.140		
MAR	8.300	8.260	8.050	8.100	8.130	8.370	8.530		
APR	8.170	8.210	8.130	8.120	8.100	8.230	8.200		
MAY	8.340	8.370	8.310	8.300	8.240	8.220	8.430		
JUN	8.110	8.130	8.020	8.140	7.980	8.310	8.250		
JUL	8.190	8.280	8.250	8.150	8.320	8.320	8.300		
AUG	8.190	8.220	8.050	8.200	8.070	8.350	8.320		
SEP	8.240	8.300	8.090	8.030	8.190	8.320	8.340		
OCT	8.330	8.330	8.020	8.230	8.170	8.410	8.400		
NOV	8.340	8.250	8.020	8.230	8.050	8.400	8.350		
DEC	8.370	8.300	8.380	8.300	8.110	8.490	8.370		

PHOSPHORUS FILT REACT (MG/L)				DETIN LIMIT = .0005	GUIDELINE = N/A				
JAN	.001 <T	.000 <T	-	-	.001 <T	.000 <T	.003 <T		
FEB	.001 <T	.001 <T	.001 <T	-	.002 <T	.001 <T	.001 <T		
MAR	.000 <T	.001 <T	.001 <T	-	.002 <T	.000 <T	.002 <T		
APR	.001 <T	.001 <T	.001 <T	-	.001 <T	.001 <T	.001 <T		
MAY	.001 <T	.001 <T	.001 <T	-	.001 <T	.001 <T	.002 <T		
JUN	BOL	BOL	BOL	-	.000 <T	BOL	BOL		
JUL	BOL	BOL	BOL	-	BOL	BOL	BOL		
AUG	BOL	BOL	BOL	-	BOL	BOL	BOL		
SEP	.001 <T	.000 <T	-	-	.000 <T	.001 <T	.002 <T		
OCT	BOL	BOL	BOL	-	.002 <T	.001 <T	.001 <T		
NOV	BOL	BOL	BOL	-	BOL	BOL	BOL		
DEC	BOL	BOL	BOL	-	BOL	BOL	BOL		

PHOSPHORUS TOTAL (MG/L)				DETIN LIMIT = .002	GUIDELINE = .40 (F2)				
JAN	.002 <T	.002 <T	.002 <T	-	.003 <T	.003 <T	.003 <T		
FEB	BOL	BOL	BOL	-	BOL	BOL	BOL		
MAR	BOL	BOL	BOL	-	.003 <T	.003 <T	.004 <T		
APR	.002 <T	.002 <T	.002 <T	-	.004 <T	.004 <T	.006 <T		
MAY	BOL	BOL	BOL	-	.003 <T	.002 <T	.004 <T		
JUN	.005 <T	.006 <T	.006 <T	-	.008 <T	.007 <T	.008 <T		
JUL	.002 <T	.002 <T	.002 <T	-	.003 <T	.005 <T	.006 <T		
AUG	BOL	BOL	BOL	-	BOL	BOL	BOL		
SEP	.002 <T	.004 <T	.004 <T	-	.003 <T	.005 <T	.006 <T		
OCT	.004 <T	.004 <T	.004 <T	-	.008 <T	.007 <T	.005 <T		
NOV	.003 <T	.005 <T	.005 <T	-	.004 <T	.005 <T	.004 <T		
DEC	BOL	BOL	BOL	-	BOL	BOL	BOL		

SITE	K21 RAW	MANNHEIM RESERVOIR	STANDING	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE							
SULPHATE (mg/L)			DEF'N LIMIT = .200		GUILDELINE = .500. (A3)		
JAN	52.340	50.240	166.500	121.400	111.500	54.990	54.660
FEB	52.500	49.920	163.400	114.700	104.600	53.550	53.480
MAR	52.430	49.210	72.930	76.040	106.250	57.770	57.650
APR	52.310	50.430	169.660	121.340	105.700	43.730	43.680
MAY	53.220	52.130	53.710	52.090	110.000	50.120	49.760
JUN	53.500	53.680	165.500	66.070	104.300	49.810	49.740
JUL	51.160	51.480	68.940	57.610	104.120	44.970	44.880
AUG	53.370	53.140	174.880	59.670	106.610	44.600	44.330
SEP	53.290	52.130	134.130	154.350	107.320	47.350	47.370
OCT	53.540	51.640	175.310	69.880	106.410	49.720	48.880
NOV	53.340	50.450	165.780	51.530	104.110	48.370	47.390
DEC	54.230	52.150	52.110	52.100	105.130	50.540	50.450
TURBIDITY (FTU)			DEF'N LIMIT = .02		GUILDELINE = 1.00 (A1)		
JAN	.670	.940	.660	.530	.480	.470	.280
FEB	.930	.440	.890	.900	.490	4,300	.310
MAR	.430	.460	.630	.440	.510	.450	.300
APR	.480	1.210	USD	4,000 USD	3,450 USD	1,300 USD	.760
MAY	.320	.250	<T	.480	.430	.440	.520
JUN	.880	.420		1,780 RRV	.710	.580	1,030
JUL	.350	.460		.840	.350	.470	.450
AUG	.400	.920		1,500	1,080	.920	.660
SEP	.630	.610		.650	.930	.630	.570
OCT	.550	.950		.850	<240 <T	1,050	.190 <T
NOV	.200	.680		1,050	240	.640	.060 <T
DEC	.200	.450		.540	.500	.350	.090 <T

SITE	K21 RAW	MANNHEIM RESERVOIR	STANDING	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE	TYPE	TYPE	FREE FLOW	FREE FLOW	GUIDELINE = 50. (A1)	GUIDELINE = 50. (A1)	GUIDELINE = 50. (A1)
SILVER (µg/L)	)	)	DETIN LIMIT = .020	DETIN LIMIT = .020	GUIDELINE = 50. (A1)	GUIDELINE = 50. (A1)	GUIDELINE = 50. (A1)
JAN	BDL	BOL	BOL	BOL	BDL	BDL	BDL
FEB	.050 <T	BOL	.050 <T	BOL	.040 <T	.040 <T	.120 <T
MAR	.070 <T	BOL	.070 <T	BOL	.050 <T	.030 <T	.060 <T
APR	BOL	BOL	.060 <T	BOL	BDL	BDL	BDL
MAY	.060 <T	BOL	.100 <T	BOL	BOL	BOL	BOL
JUN	.050 <T	BOL	.120 <T	BOL	.030 <T	.070 <T	.040 <T
JUL	BOL	BOL	.050 <T	BOL	BOL	BOL	BOL
AUG	.040 <T	BOL	.050 <T	BOL	BOL	BOL	BOL
SEP	BDL	BOL	BOL	BOL	BDL	BDL	BDL
OCT	BOL	BOL	.040 <T	BOL	BOL	BOL	BOL
NOV	BDL	BOL	.030 <T	BOL	BOL	BOL	BOL
DEC	BDL	BOL	BOL	BOL	BOL	BOL	BOL
ALUMINUM (µg/L)	)	)	DETIN LIMIT = .050	DETIN LIMIT = 100. (A4)	GUIDELINE = 50. (A1)	GUIDELINE = 50. (A1)	GUIDELINE = 50. (A1)
JAN	2,800	1,700	3,800	1,900	2,600	1,800	1,500
FEB	7,500	7,800	8,000	8,600	5,900	3,600	3,200
MAR	7,600	7,000	7,800	7,100	7,800	4,400	4,300
APR	12,000	11,000	14,000	12,000	13,000	6,400	6,400
MAY	5,300	5,200	5,800	5,700	5,700	3,400	3,300
JUN	12,000	11,000	17,000	12,000	16,000	7,900	8,200
JUL	18,850	16,850	18,000	16,810	15,000	8,800	9,500
AUG	17,000	25,000	22,000	17,000	25,000	12,000	12,000
SEP	11,000	9,000	12,000	13,000	13,000	7,400	7,300
OCT	6,100	5,500	8,400	5,600	6,900	4,200	4,100
NOV	14,000	12,000	15,000	13,000	15,000	5,100	4,800
DEC	6,500	5,700	6,900	6,000	7,300	5,000	4,400
ARSENIC (µg/L)	)	)	DETIN LIMIT = 0.050	DETIN LIMIT = 50.0 (A1)	GUIDELINE = 50.0 (A1)	GUIDELINE = 50.0 (A1)	GUIDELINE = 50.0 (A1)
JAN	.210 <T	BOL	.160 <T	BOL	.150 <T	BDL	.090 <T
FEB	.730 <T	.750 <T	.700 <T	1,000 <T	.790 <T	BDL	.290 <T
MAR	.600 <T	.700 <T	.670 <T	.820 <T	1,200	.360 <T	.820 <T
APR	.540 <T	.620 <T	1,000 <T	.620 <T	.320 <T	.210 <T	.320 <T
MAY	.420 <T	.800 <T	.810 <T	.720 <T	.610 <T	.160 <T	.390 <T
JUN	BOL	BOL	1,200	BOL	1,100	.500 <T	.500 <T
JUL	.490 <T	.710 <T	.830 <T	.680 <T	.680 <T	.170 <T	.250 <T
AUG	.650 <T	.670 <T	1,700	.690 <T	1,400	.770 <T	.560 <T
SEP	.560 <T	.510 <T	2,200	2,100	2,300	.750 <T	.700 <T
OCT	.150 <T	.290 <T	1,200	.360 <T	.490 <T	.120 <T	.190 <T
NOV	.440 <T	.520 <T	2,100	.690 <T	1,500	.130 <T	.500 <T
DEC	.300 <T	.400 <T	.470 <T	.380 <T	.800 <T	.480 <T	.270 <T

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STANDING	FREE FLOW	GUIDELINE = 1000. (A1)	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
BARIUM (mg/L)									
JAN	110.000	63.000	120.000	100.000	130.000	27.000			
FEB	120.000	120.000	120.000	110.000	150.000	30.000			
MAR	110.000	110.000	83.000	91.000	130.000	28.000			
APR	110.000	110.000	130.000	110.000	130.000	26.000			
MAY	100.000	100.000	81.000	86.000	130.000	27.000			
JUN	120.000	120.000	140.000	100.000	140.000	30.000			
JUL	118.000	119.000	104.000	105.000	130.000	27.000			
AUG	120.000	110.000	140.000	97.000	150.000	29.000			
SEP	110.000	110.000	110.000	110.000	150.000	28.000			
OCT	110.000	110.000	120.000	89.000	130.000	28.000			
NOV	120.000	110.000	120.000	96.000	140.000	25.000			
DEC	110.000	110.000	80.000	100.000	150.000	31.000			
BORON (µg/L)									
JAN	96.000	30.000	85.000	75.000	110.000	83.000	73.000		
FEB	140.000	150.000	65.000	170.000	150.000	74.000	25.000		
MAR	210.000	210.000	230.000	230.000	260.000	200.000	200.000		
APR	570.000	570.000	560.000	640.000	690.000	410.000	450.000		
MAY	30.000	54.000	64.000	65.000	73.000	58.000	58.000		
JUN	57.000	48.000	77.000	60.000	79.000	65.000	65.000		
JUL	91.900	83.500	89.000	88.700	100.000	77.000	79.000		
AUG	87.000	110.000	110.000	57.000	130.000	95.000	110.000		
SEP	76.000	41.000	89.000	98.000	110.000	57.000	54.000		
OCT	22.000	23.000	57.000	21.000	41.000	44.000	38.000		
NOV	53.000	53.000	42.000	22.000	65.000	23.000	24.000		
DEC	15.000 <1	14.000 <1	11.000 <1	12.000 <1	38.000	46.000	37.000		
BERYLLIUM (µg/L)									
JAN	.270 <1	BDL	.060 <1	.080 <1	.220 <1	.180 <1			
FEB	.400 <1	.420 <1	.050 <1	.300 <1	.310 <1	.180 <1			
MAR	.550	.430 <1	.470 <1	.620	.530	.480 <1			
APR	.380 <1	.540	.390 <1	.440 <1	.730	.360 <1			
MAY	.030 <1	.170 <1	.150 <1	.250 <1	.360 <1	.170 <1			
JUN	.090 <1	.080 <1	.100 <1	.200 <1	.210 <1	.210 <1			
JUL	.340 <1	.290 <1	.350 <1	.300 <1	.330 <1	.320 <1			
AUG	.240 <1	.300 <1	.260 <1	.170 <1	.360 <1	.330 <1			
SEP	.230 <1	.080 <1	.160 <1	.180 <1	.210 <1	.110 <1			
OCT	.040 <1	.060 <1	.110 <1	.050 <1	.050 <1	.080 <1			
NOV	.110 <1	.180 <1	.020 <1	.140 <1	.80L	.80L			
DEC	BDL	BDL	BDL	BDL	BDL	BDL			

SITE	K21 RAW	MANNHEIM RESERVOIR	STANDING	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
CADMIUM ($\mu\text{g/L}$)			DET'N LIMIT = 0.050	GUIDELINE = 5.000 (A1)	FREE FLOW		
JAN	BDL	BOL	.090 <T	BOL	BOL	BOL	BOL
FEB	.260 <T	BOL	.150 <T	.150 <T	.140 <T	.140 <T	BOL
MAR	BDL	BOL	.090 <T	BOL	BOL	BOL	BOL
APR	BDL	BOL	.140 <T	.130 <T	.120 <T	.080 <T	BOL
MAY	.060 <T	BDL	.100 <T	BOL	BOL	.070 <T	.060 <T
JUN	BDL	BDL	.200 <T	BOL	.170 <T	.070 <T	.100 <T
JUL	BDL	BDL	BOL	BOL	.150 <T	.120 <T	.120 <T
AUG	.100 <T	BDL	.180 <T	.090 <T	.140 <T	.120 <T	.210 <T
SEP	BDL	BOL	.060 <T	.080 <T	.070 <T	.100 <T	.130 <T
OCT	BDL	BDL	.070 <T	BOL	BOL	BOL	BOL
NOV	BDL	BDL	BOL	BOL	BOL	BOL	.080 <T
DEC	BDL	BDL	BOL	BOL	BOL	BOL	BOL
COBALT ($\mu\text{g/L}$)							
JAN	.210 <T	.100 <T	.300 <T	.240 <T	.510 <T	.160 <T	.180 <T
FEB	.230 <T	.230 <T	.300 <T	.310 <T	.540 <T	.290 <T	.310 <T
MAR	.040 <T	BDL	BDL	BDL	.120 <T	.090 <T	.170 <T
APR	BDL	BDL	BDL	BDL	.200 <T	BDL	BDL
MAY	.160 <T	.320 <T	.360 <T	.380 <T	.750 <T	.390 <T	.330 <T
JUN	BDL	BDL	BDL	BDL	.250 <T	.050 <T	.090 <T
JUL	.260 <T	.200 <T	.250 <T	.250 <T	.270 <T	.050 <T	BDL
AUG	BDL	BDL	BDL	BDL	.130 <T	BDL	BDL
SEP	BDL	BDL	BDL	BDL	.170 <T	.090 <T	.040 <T
OCT	.070 <T	BDL	.040 <T	.080 <T	.430 <T	.230 <T	.200 <T
NOV	BDL	BDL	BDL	BDL	.250 <T	BDL	BDL
DEC	BDL	BDL	BDL	BDL	.420 <T	.160 <T	.190 <T
CHROMIUM ($\mu\text{g/L}$)							
JAN	16.000	3,900	10,000	10,000	13,000	10,000	8,900
FEB	23,000	24,000	5,600	24,000	27,000	11,000	1,200
MAR	19,000	19,000	20,000	20,000	22,000	17,000	16,000
APR	18,000	18,000	18,000	21,000	22,000	13,000	14,000
MAY	6,800	17,000	18,000	19,000	21,000	17,000	17,000
JUN	12,000	10,000	13,000	13,000	14,000	11,000	11,000
JUL	16,220	15,480	15,270	15,740	20,000	13,000	13,000
AUG	15,000	12,000	16,000	8,100	19,000	12,000	14,000
SEP	18,000	8,500	19,000	20,000	23,000	7,800	7,100
OCT	3,200	4,200	9,800	2,400	5,600	7,100	4,600
NOV	6,000	6,100	1,400	1,200	8,100	BDL	.950 <T
DEC	BDL	.790 <T	BDL	BDL	1,500 <T	5,600	3,400 <T

SITE	K21 TYPE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
COPPER (kg/L)							
JAN	.620 <T	6,100	150,000	13,000	3,200	3,300	130,000
FEB	.900 <T	2,700	110,000	12,000	4,400	3,700	110,000
MAR	.910 <T	2,700	96,000	10,000	2,200	3,900	140,000
APR	.820 <T	1,800	110,000	8,400	1,800	3,000	130,000
MAY	.600 <T	4,300	78,000	7,500	2,300	3,300	140,000
JUN	.950 <T	1,800	120,000	11,000	1,800	4,300	130,000
JUL	.780 <T	1,670	76,000	11,450	2,400	5,600	130,000
AUG	1,000 <T	1,500	130,000	12,000	2,900	5,400	120,000
SEP	.770 <T	1,600	110,000	17,000	2,800	5,400	140,000
OCT	.680 <T	1,200	110,000	12,000	4,300	4,400	60,000
NOV	.610 <T	1,100	99,000	9,600	2,000	3,900	110,000
DEC	.550 <T	1,000 <T	56,000	7,000	2,500 <T	4,200 <T	49,000
IRON (kg/L)							
JAN	BOL	16,000 <T	260,000	66,000	110,000	BOL	BOL
FEB	BOL	BOL	250,000	54,000	110,000	BOL	BOL
MAR	BOL	BOL	57,000	6,700 <T	110,000	BOL	BOL
APR	BOL	BOL	330,000	130,000	110,000	BOL	BOL
MAY	BOL	BOL	310,000	BOL	80,000	BOL	BOL
JUN	BOL	15,000 <T	62,000	25,000 <T	110,000	BOL	BOL
JUL	BOL	9,290 <T	190,000	BOL	100,000	BOL	BOL
AUG	BOL	7,100 <T	190,000	18,000 <T	120,000	BOL	BOL
SEP	BOL	7,400 <T	190,000	370,000	120,000	BOL	BOL
OCT	BOL	7,100 <T	320,000	220,000	BOL	BOL	BOL
NOV	BOL	5,400 <T	330,000	16,000 <T	110,000	13,000 <T	BOL
DEC	BOL	BOL	6,200 <T	BOL	110,000	BOL	BOL
MERCURY (kg/L)							
JAN	BOL	BOL	BOL	BOL	BOL	BOL	BOL
FEB	BOL	BOL	BOL	BOL	BOL	BOL	BOL
MAR	BOL	BOL	.020 <T	BOL	BOL	BOL	BOL
APR	BOL	BOL	..	BOL	BOL	BOL	BOL
MAY	BOL	BOL	..	BOL	BOL	BOL	BOL
JUN	BOL	BOL	..	BOL	BOL	BOL	BOL
JUL	BOL	BOL	..	BOL	BOL	BOL	BOL
AUG	.050 <T	.040 <T	.040 <T	BOL	BOL	BOL	BOL
SEP	.030 <T	.030 <T	.040 <T	..	BOL	BOL	BOL
OCT	.070	.070	.050 <T	..	BOL	BOL	BOL
NOV	.020 <T	.020 <T	.030 <T	..	BOL	BOL	BOL
DEC	.020 <T	.020 <T	.020 <T	..	BOL	BOL	BOL

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
MANGANESE ($\mu\text{g/L}$)						
JAN	11.000	.740	58.000	60.000	97.000	2.300
FEB	12.000	5.900	56.000	61.000	110.000	2.800
MAR	11.000	3.400	42.000	35.000	91.000	.620 <T
APR	9.600	4.200	130.000	69.000	90.000	.630 <T
MAY	9.700	28.000	27.000	5.700	93.000	.600 <T
JUN	11.000	12.000	120.000	77.000	110.000	1.200 <T
JUL	11.600	12.570	67.000	63.700	110.000	4.000 <T
AUG	12.000	11.000	150.000	51.000	120.000	38.000 <T
SEP	12.000	12.000	93.000	260.000	130.000	39.000 <T
OCT	11.000	12.000	110.000	69.000	110.000	74.000 <T
NOV	11.000	11.000	130.000	13.000	100.000	84.000 <T
DEC	11.000	9.800	20.000	6.700	110.000	32.000 <T
					2.400	2.100 <T
MOLYBDENUM ($\mu\text{g/L}$)			DETIN LIMIT = 0.020	GUIDELINE = N/A		
JAN	.800	.560	.480 <T	.520	.760	.580
FEB	1.100	.960	.860	.950	1.100	.960
MAR	1.000	.960	.830	.920	.900	.920
APR	.880	.720	.710	.740	.680	.680
MAY	.780	.270 <T	.890	.910	.750	.920
JUN	.910	.680	.840	.900	.810	.820
JUL	1.060	.810	1.040	.990	1.400	1.300
AUG	.940	.750	.970	.780	.800	1.800
SEP	.730	.600	.690	.690	.620	1.800
OCT	.750	.600	.660	.620	.610	1.700
NOV	.670	.530	.610	.510	.570	1.000
DEC	.750	.550	.580	.530	.500 <T	.690 <T
NICKEL ($\mu\text{g/L}$)			DETIN LIMIT = 0.100	GUIDELINE = 50. (F3)		
JAN	.330 <T	BDL	9.300	.670 <T	1.300 <T	.860 <T
FEB	2.100	2.300	10.000	3.200	2.400	1.500 <T
MAR	.800 <T	BDL	4.200	BDL	1.100 <T	1.400 <T
APR	BDL	BDL	1.900 <T	BDL	BDL	BDL
MAY	3.800	6.100	6.100	6.000	7.100	5.400
JUN	BDL	BDL	6.300	.450 <T	1.600 <T	1.800 <T
JUL	3.030	2.950	6.260	3.000	1.600 <T	.680 <T
AUG	BDL	BDL	4.600	BDL	BDL	1.100 <T
SEP	BDL	BDL	2.900	.490 <T	BDL	.830 <T
OCT	BDL	BDL	.590 <T	BDL	BDL	.710 <T
NOV	BDL	BDL	2.800	BDL	BDL	.400 <T
DEC	BDL	BDL	.810 <T	BDL	BDL	.760 <T

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	FREE FLOW	K70 RAW	K70 TREATED
LEAD (µg/L)	TYPE	STANDING			STRANGE ST RESERVOIR	
DETTIN LIMIT = .050						
JAN	.120 <1	.030 <1	18,000	.850	.190 <1	.120 <1
FEB	BDL	.210	8,000	.640	.400	.270
MAR	.270	.250	6,100	.790	.150 <1	.270
APR	.310	.040 <1	20,000	.430	.100 <1	.670
MAY	.650	.730	4,000	.500	.420	.320
JUN	.260	.220	10,000	.710	.210	.1400
JUL	.220	.290	5,380	.940	.130 <1	.650
AUG	.410	.120 <1	7,600	.650	.230	.350
SEP	.110 <1	.050 <1	5,400	.320	.060 <1	.110 <1
OCT	.200 <1	.150 <1	8,100	.320	1,300	.190 <1
NOV	BDL	.030 <1	7,400	.270	.240	.290
DEC	.070 <1	BDL	1,800	.160 <1	.180 <1	.670
GUIDELINE = .050. (A1)						
ANTHONY (µg/L)	)	DETTIN LIMIT = .050		GUIDELINE = .050. (D4)		
JAN	.330	.300	.490	.360	.260	.300
FEB	.700	.550	.610	.600	.740	.600
MAR	.510	.670	.680	.550	.490	.490
APR	.480	.410	.620	.430	.410	.500
MAY	.760	.690	1,100	.620	.550	.770
JUN	.610	.710	.930	.640	.690	.630
JUL	.620	.520	.940	.630	.530	.700
AUG	.660	.600	.790	.580	.600	.520
SEP	.400	.470	.540	.390	.380	.360
OCT	.390	.390	.560	.420	.380	.380
NOV	.260	.260	.460	.300	.290	.280
DEC	.360 <1	.400 <1	.500 <1	.400 <1	.360 <1	.420 <1
GUIDELINE = .0200						
SELENIUM (µg/L)	)	DETTIN LIMIT = .0200		GUIDELINE = .0200. (A1)		
JAN	.370 <1	.790 <1	.490 <1	.310 <1	1,300 <1	.430 <1
FEB	1,700 <1	2,800 <1	1,400 <1	2,000 <1	3,700 <1	.610 <1
MAR	1,700 <1	3,100 <1	3,600 <1	6,600 <1	4,300 <1	.850 <1
APR	2,400 <1	2,900 <1	6,000 <1	5,800 <1	3,800 <1	2,700 <1
MAY	1,600 <1	3,100 <1	6,600 <1	4,500 <1	8,400 <1	2,200 <1
JUN	1,700 <1	1,700 <1	2,300 <1	800	2,900 <1	2,600 <1
JUL	BDL	BDL	BDL	1,500 <1	1,300 <1	1,700 <1
AUG	2,300 <1	BDL	2,200 <1	1,500 <1	2,900 <1	1,100 <1
SEP	BDL	BDL	1,200 <1	800	BDL	2,800 <1
OCT	BDL	BDL	BDL	BDL	BDL	BDL
NOV	BDL	1,300 <1	2,100 <1	1,600 <1	BDL	1,500 <1
DEC	BDL	BDL	BDL	BDL	BDL	1,200 <1

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW		
STRONTIUM (μg/L)			DET/N LIMIT = .050	GUIDELINE = N/A		
JAN	240.000	120.000	1200.000	850.000	550.000	520.000
FEB	270.000	210.000	1300.000	930.000	680.000	600.000
MAR	260.000	200.000	810.000	570.000	590.000	600.000
APR	240.000	180.000	1100.000	820.000	590.000	490.000
MAY	240.000	200.000	470.000	260.000	550.000	490.000
JUN	270.000	220.000	1300.000	660.000	740.000	580.000
JUL	257.000	210.000	635.000	453.000	680.000	550.000
AUG	290.000	210.000	1500.000	400.000	730.000	540.000
SEP	270.000	200.000	1200.000	1300.000	730.000	520.000
OCT	250.000	200.000	1400.000	540.000	620.000	500.000
NOV	250.000	200.000	1400.000	260.000	640.000	510.000
DEC	250.000	190.000	360.000	200.000	690.000	540.000
TITANIUM (μg/L)			DET/N LIMIT = .050	GUIDELINE = N/A		
JAN	17.000	11.000	20.000	17.000	19.000	13.000
FEB	14.000	14.000	16.000	18.000	16.000	9.900
MAR	14.000	15.000	15.000	15.000	18.000	11.000
APR	15.000	16.000	21.000	19.000	20.000	12.000
MAY	18.000	17.000	19.000	18.000	20.000	13.000
JUN	22.000	21.000	27.000	22.000	26.000	16.000
JUL	20.980	20.000	21.800	21.100	24.000	13.000
AUG	21.000	18.000	29.000	21.000	29.000	17.000
SEP	12.000	10.000	14.000	15.000	15.000	8.500
OCT	17.000	15.000	21.000	16.000	19.000	11.000
NOV	11.000	11.000	15.000	11.000	15.000	6.800
DEC	13.000	12.000	12.000	13.000	19.000	10.000
THALLIUM (μg/L)			DET/N LIMIT = .010	GUIDELINE = 13. (04)		
JAN	BDL	BDL	BDL	BDL	.030 <T	.020 <T
FEB	.110 <T	.020 <T	.060 <T	.100 <T	.030 <T	.030 <T
MAR	BDL	BDL	BDL	BDL	.030 <T	.030 <T
APR	.080 <T	.020 <T	.030 <T	.030 <T	.030 <T	.030 <T
MAY	.160 <T	.220	.160 <T	BDL	.030 <T	.030 <T
JUN	.030 <T	BDL	BDL	BDL	.030 <T	.030 <T
JUL	.100 <T	.100	.120 <T	.060 <T	.030 <T	.030 <T
AUG	.040 <T	BDL	.040 <T	BDL	.070 <T	.060 <T
SEP	BDL	.020 <T	BDL	BDL	.030 <T	.030 <T
OCT	.020 <T	BDL	.020 <T	BDL	.030 <T	.030 <T
NOV	.030 <T	BDL	.030 <T	BDL	.030 <T	.030 <T
DEC	BDL	BDL	BDL	BDL	.030 <T	.030 <T

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STANDING	FREE FLOW	GUIDELINE = 20. (A2)	SITE 1	STANDING	FREE FLOW	GUIDELINE = N/A	SITE 1	STANDING	FREE FLOW	GUIDELINE = N/A	SITE 1	STANDING	FREE FLOW	GUIDELINE = 5000. (A3)	
URANIUM (µg/L)				DET'N LIMIT = .020															
JAN	.970	.590		1.600		1.300		1.500		1.700		2.000		1.100		.700		.720	
FEB	1.400	1.400		1.400		2.000		1.700		1.200		1.600		.940		.300		1.300	
MAR	1.200			1.200						1.700		1.400		.900		.940			
APR	1.100			1.200						1.100		1.000		.880		.880			
MAY	1.000			1.100						1.000		.960		.700		.690			
JUN	1.300			1.500						1.900		1.500		.950		.930			
JUL	1.330			1.580						1.610		1.610		.900		.920			
AUG	1.100	1.300		1.300		1.700		1.400		1.200		1.700		.820		.850			
SEP	.850			940		1.300		1.200		1.100		1.500		.500		.480			
OCT	.950			1.100		1.500		1.200		1.200		1.500		.620		.590			
NOV	.970			1.200		1.500		1.200		1.200		1.500		.630		.670			
DEC	.960			1.200		.990		1.000		1.000		1.500		.850		.860			
VANADIUM (µg/L)				DET'N LIMIT = .050															
JAN	.330 <1	.180 <1		.180 <1		.240 <1		.210 <1		.240 <1		.240 <1		.280 <1		.220 <1		.210 <1	
FEB	.320 <1	.240 <1		.240 <1		.240 <1		.230 <1		.100 <1		.100 <1		.150 <1		.250 <1		.220 <1	
MAR	.290 <1			.220 <1		.100 <1		.100 <1		.100 <1		.100 <1		.130 <1		.130 <1		.110 <1	
APR														.110 <1		.150 <1		.160 <1	
MAY	.410 <1			.180 <1		.060 <1		.060 <1		.220 <1		.270 <1		.710		.520		.430 <1	
JUN	.300 <1			.310 <1		.130 <1		.080 <1		.080 <1		.080 <1		.090 <1		.200 <1		.240 <1	
JUL	.390 <1			.250 <1		.250 <1		.250 <1		.230 <1		.230 <1		.500 <1		.360 <1		.390 <1	
AUG	.360 <1			.250 <1		.470 <1		.470 <1		.230 <1		.230 <1		.610		.370 <1		.410 <1	
SEP	.420 <1			.290 <1		.500 <1		.500 <1		.500 <1		.560		.660		.390 <1		.370 <1	
OCT	.260 <1			.170 <1		.150 <1		.150 <1		.170 <1		.170 <1		.090 <1		.260 <1		.180 <1	
NOV	.430 <1			.350 <1		.690		.690		.300 <1		.300 <1		.750		.210 <1		.120 <1	
DEC	.340 <1			.340 <1		.230 <1		.230 <1		.270 <1		.270 <1		.270 <1		.320 <1		.280 <1	
ZINC (µg/L)				DET'N LIMIT = .001															
JAN	7.600			1.400		58.000		8.000		24.000		24.000		4.700		3.800			
FEB	7.700			7.100		45.000		7.100		28.000		28.000		5.000		4.300			
MAR	7.900			5.900		27.000		5.900		17.000		17.000		5.500		5.200			
APR	7.200			5.100		27.000		5.900		12.000		12.000		3.300		3.200			
MAY	7.600			8.600		14.000		4.600		14.000		14.000		5.000		5.300			
JUN	7.900			5.500		45.000		7.500		13.000		13.000		5.100		5.100			
JUL	7.980			5.390		20.590		6.840		14.000		14.000		7.400		6.300			
AUG	7.800			4.600		39.000		5.100		13.000		13.000		5.900		5.300			
SEP	6.600			3.900		21.000		6.900		13.000		13.000		6.000		5.400			
OCT	6.400			4.500		20.000		4.700		14.000		14.000		5.900		5.200			
NOV	6.000			3.500		20.000		3.200		11.000		11.000		4.100		3.500			
DEC	7.200					4.000		12.000		4.000		13.000		6.600		3.500			

SITE	TYPE	K21 RAW	MANNHEIM RESERVOIR	STANDING	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
PESTICIDES & PCB								
ALPHA BHC (mg/L)	)		DET'N LIMIT = 1,000		GUIDELINE = 700 (G)			
JAN	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
FEB	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
MAR	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
APR	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
MAY	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
JUL	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
AUG	BDL	BDL	-	BDL	BDL	1 QU	1 QU	1 QU
SEP	BDL	BDL	-	BDL	BDL	1,000 <T	BDL	BDL
OCT	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
DEC	BDL	ILA	-	BDL	BDL	BDL	BDL	BDL
ATRAZINE (mg/L)								
			DET'N LIMIT = 50.00		GUIDELINE = 60000 (B3)			
JAN	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
FEB	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
MAR	BDL	BDL	-	BDL	BDL	290,000 <T	290,000 <T	275,000 <T
APR	BDL	BDL	-	BDL	BDL	320,000 <T	320,000 <T	380,000 <T
MAY	BDL	BDL	-	BDL	BDL	1270,000	1270,000	550,000
JUN	BDL	BDL	-	BDL	BDL	190,000 <T	190,000 <T	260,000 <T
JUL	BDL	BDL	-	BDL	BDL	690,000	690,000	550,000
AUG	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
SEP	BDL	BDL	-	BDL	BDL	240,000 <T	240,000 <T	370,000 <T
OCT	BDL	BDL	-	BDL	BDL	340,000 <T	340,000 <T	380,000 <T
NOV	BDL	BDL	-	BDL	BDL	340,000 <T	340,000 <T	380,000 <T
DEC	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
CYANAZINE (BLADEX) (mg/L)								
			DET'N LIMIT = 100.00		GUIDELINE = 10000 (B3)			
JAN	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
FEB	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
MAR	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
APR	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
MAY	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
JUL	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
AUG	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
SEP	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
OCT	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	-	BDL	BDL	BDL	BDL	BDL
DEC	160,000 <T	BDL	-	BDL	BDL	BDL	BDL	BDL

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE						
D-Ethyl Atrazine (mg/L)						
JAN	BOL	BOL	BOL	BOL	BOL	BOL
FEB	BOL	BOL	*	BOL	BOL	BOL
MAR	BOL	BOL	*	BOL	BOL	BOL
APR	BOL	BOL	*	BOL	BOL	BOL
MAY	BOL	BOL	*	310,000 <T	340,000 <T	
JUN	BOL	BOL	*	BOL	270,000 <T	
JUL	BOL	BOL	*	BOL	BOL	BOL
AUG	BOL	BOL	*	430,000 <T	320,000 <T	
SEP	BOL	BOL	*	BOL	BOL	BOL
OCT	BOL	BOL	*	BOL	BOL	BOL
NOV	BOL	BOL	*	200,000 <T	230,000 <T	
DEC	BOL	BOL	*	240,000 <T	230,000 <T	

SITE TYPE	K21 RAW	MANNHEIM RESERVOIR	STANDING	FREE FLOW	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
PHENOLICS (µg/L)							
	PHENOLICS		DETN LIMIT = 0.2	GUIDELINE = 2.00 (A3)			
JAN	.600 <T	.600 <T	.	.	1.000	1.200	1.200
FEB	BDL	BDL	.	.	.600 <T	1.000	1.200
MAR	1.200	1.200	.	.	1.000	1.600	.600 <T
APR	.800 <T	.200 <T	.	.	BDL	.600 <T	.800 <T
MAY	1.600	1.200	.	.	1.800	1.000 <T	2.200
JUN	.600 <T	.800 <T	.	.	.600 <T	1.000 <T	.600 <T
JUL	1.200	.800 <T	.	.	.400 <T	1.600	1.000
AUG	.600 <T	1.600	.	.	.	1.600	.800 <T
SEP	1.200	2.200	.	.	3.000	1.600	2.200
OCT	.600 <T	.400 <T	.	.	.600 <T	1.200	1.600
NOV	BDL	BDL	.	.	BDL	.600 <T	.400 <T
DEC	BDL	BDL	.	.	BDL	BDL	BDL

SITE	K21 TYPE	K21 RAW	MANNHEIM RESERVOIR	SITE 1 STANDING	FREE FLOW	GUIDELINE = 5.0 (B1)	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
VOLATILES)									
BENZENE (µg/L)				DETIN LIMIT = .050		GUIDELINE = 5.0 (B1)			
JAN	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
FEB	BDL	BDL	BDL	.	.050 <T	BDL	BDL	BDL	BDL
MAR	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
APR	BDL	BDL	BDL	.	.200 <T	BDL	BDL	BDL	BDL
MAY	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
AUG	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
SEP	BDL	BDL	BDL	.	.050 <T	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
TOLUENE (µg/L)									
				DETIN LIMIT = .050		GUIDELINE = 24.0 (B4)			
JAN	BDL	BDL	BDL	.	.050 <T	.100 <T	BDL	BDL	BDL
FEB	BDL	BDL	BDL	.	BDL	.100 <T	BDL	BDL	BDL
MAR	BDL	BDL	BDL	.	BDL	.100 <T	BDL	BDL	BDL
APR	BDL	BDL	BDL	.	.050 <T	.100 <T	BDL	BDL	BDL
MAY	BDL	BDL	BDL	.	.100 <T	.150 <T	BDL	BDL	BDL
JUN	BDL	BDL	BDL	.	.050 <T	.050 <T	BDL	BDL	BDL
JUL	BDL	BDL	BDL	.	.050 <T	.100 <T	BDL	BDL	BDL
AUG	BDL	BDL	BDL	.	.050 <T	.150 <T	BDL	BDL	BDL
SEP	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	.	.150 <T	.200 <T	BDL	BDL	BDL
ETHYLBENZENE (kg/L)									
				DETIN LIMIT = .050		GUIDELINE = 2.4 (B4)			
JAN	.050 <T	BDL	BDL	.	.050 <T	.100 <T	BDL	BDL	BDL
FEB	BDL	BDL	BDL	.	.050 <T	.100 <T	BDL	BDL	BDL
MAR	BDL	BDL	BDL	.	.050 <T	.100 <T	BDL	BDL	BDL
APR	.100 <T	BDL	BDL	.	.050 <T	.250 <T	BDL	BDL	BDL
MAY	BDL	BDL	BDL	.	.050 <T	.100 <T	BDL	BDL	BDL
JUN	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
AUG	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
SEP	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	.	BDL	BDL	BDL	BDL	BDL

SITE	TYPE	K21 RAW	MANNHEIM RESERVOIR	STANDING	SITE 1	FREE FLOW	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
M-XYLENE ($\mu\text{g/L}$)									
JAN	BOL	BOL	DET'N LIMIT = .100	BOL	BOL	GUIDELINE = 300 (84)	.200 <1	BOL	BOL
FEB	BOL	BOL		BOL	BOL		.050 <1	BOL	BOL
MAR	BOL	BOL		BOL	BOL		.300 <1	BOL	BOL
APR	BOL	BOL		BOL	BOL		.300 <1	BOL	BOL
MAY	BOL	BOL		BOL	BOL		.300 <1	BOL	BOL
JUN	BOL	BOL		BOL	BOL		.300 <1	BOL	BOL
JUL	BOL	BOL		BOL	BOL		.300 <1	BOL	BOL
AUG	BOL	BOL		BOL	BOL		.300 <1	BOL	BOL
SEP	BOL	BOL		BOL	BOL		.300 <1	BOL	BOL
OCT	BOL	BOL		BOL	BOL		.300 <1	BOL	BOL
NOV	BOL	BOL		BOL	BOL		.300 <1	BOL	BOL
DEC	BOL	BOL		BOL	BOL		.300 <1	BOL	BOL
O-XYLENE ($\mu\text{g/L}$)									
JAN	BOL	BOL	DET'N LIMIT = .050	BOL	BOL	GUIDELINE = 300 (84)	.100 <1	BOL	BOL
FEB	BOL	BOL		BOL	BOL		.050 <1	BOL	BOL
MAR	BOL	BOL		BOL	BOL		.100 <1	BOL	BOL
APR	BOL	BOL		BOL	BOL		.150 <1	BOL	BOL
MAY	BOL	BOL		BOL	BOL		.100 <1	BOL	BOL
JUN	BOL	BOL		BOL	BOL		.050 <1	BOL	BOL
JUL	BOL	BOL		BOL	BOL		.050 <1	BOL	BOL
AUG	BOL	BOL		BOL	BOL		.050 <1	BOL	BOL
SEP	BOL	BOL		BOL	BOL		.050 <1	BOL	BOL
OCT	BOL	BOL		BOL	BOL		.050 <1	BOL	BOL
NOV	BOL	BOL		BOL	BOL		.050 <1	BOL	BOL
DEC	BOL	BOL		BOL	BOL		.050 <1	BOL	BOL
STYRENE ($\mu\text{g/L}$)									
JAN	.400 <1	BOL	DET'N LIMIT = .050	BOL	BOL	GUIDELINE = 46.5 (02)	.500 <1	BOL	.450 <1
FEB	.150 <1	.100 <1		.450 <1	BOL		.100 <1	BOL	.100 <1
MAR	.500 <1	.100 <1		.050 <1	BOL		.850 UCs	BOL	.850 UCs
APR	.600	BOL		.050 <1	BOL		.200 <1	BOL	.200 <1
MAY	.200 <1	.050 <1		.100 <1	BOL		.150 <1	BOL	.150 <1
JUN	.150 <1	.200 <1		.050 <1	BOL		.150 <1	BOL	.150 <1
JUL	.100 <1	.200 <1		.200 <1	BOL		.350 <1	BOL	.350 <1
AUG	BOL	BOL		.150 <1	BOL		.050 <1	BOL	.150 <1
SEP	.100 <1	.100 <1		.100 <1	BOL		.150 <1	BOL	.150 <1
OCT	.100 <1	.100 <1		.050 <1	BOL		.150 <1	BOL	.150 <1
NOV	BOL	BOL		.150 <1	BOL		.100 <1	BOL	.100 <1
DEC	.200 <1	BOL		.200 <1	BOL		.050 <1	BOL	.050 <1

SITE	TYPE	K21 RAW	MANNHEIM RESERVOIR	STANDING	SITE 1	STRANGE ST RESERVOIR	K20 RAW	K20 TREATED
1,1 DICHLOROETHANE (kg/L)								
				DET'N LIMIT = .100		GUIDELINE = N/A		
JAN	BDL	BDL	BDL			.500 <T	.200 <T	BDL
FEB	BDL	BDL	BDL			.800 <T	.100 <T	BDL
MAR	BDL	BDL	BDL			.300 <T	.800 <T	BDL
APR	BDL	BDL	BDL			.800 <T	.100 <T	BDL
MAY	BDL	BDL	BDL			.200 <T	.200 <T	BDL
JUN	BDL	BDL	BDL			.200 <T	.200 <T	BDL
JUL	BDL	BDL	BDL			BDL	.200 <T	BDL
AUG	BDL	BDL	BDL			BDL	.100 <T	BDL
SEP	BDL	BDL	BDL			BDL	.200 <T	BDL
OCT	BDL	BDL	BDL			BDL	.200 <T	BDL
NOV	BDL	BDL	BDL			BDL	.200 <T	BDL
DEC	BDL	BDL	BDL			BDL	.200 <T	BDL
CHLOROFORM (kg/L)								
				DET'N LIMIT = .100		GUIDELINE = 350 (A1+)		
JAN	BDL	BDL	BDL	.100 <T		.400 <T	.700 <T	BDL
FEB	BDL	BDL	BDL	.100 <T		BDL	.500 <T	.200 <T
MAR	BDL	BDL	BDL	2.700		1.600	1.500	BDL
APR	BDL	BDL	BDL	2.000		2.700	2.900	BDL
MAY	BDL	BDL	BDL	1.800		1.200	2.000	BDL
JUN	BDL	BDL	BDL	.500 <T		.700 <T	.400 <T	BDL
JUL	BDL	BDL	BDL	.300 <T		.300 <T	.500 <T	BDL
AUG	BDL	BDL	BDL	.300 <T		.300 <T	.400 <T	BDL
SEP	BDL	BDL	BDL	.300 <T		.500 <T	.300 <T	BDL
OCT	BDL	BDL	BDL	.300 <T		.300 <T	.400 <T	BDL
NOV	BDL	BDL	BDL	.400 <T		.400 <T	.400 <T	BDL
DEC	BDL	BDL	BDL	.500 <T		.500 <T	.400 <T	BDL
111, TRICHLOROETHANE (kg/L)								
				DET'N LIMIT = .020		GUIDELINE = 200 (D1)		
JAN	BDL	BDL	BDL			BDL	.900	BDL
FEB	BDL	BDL	BDL			BDL	.980	BDL
MAR	BDL	BDL	BDL			BDL	.980	BDL
APR	BDL	BDL	BDL			BDL	.820	BDL
MAY	BDL	BDL	BDL			.020 <T	1.040	.040 <T
JUN	BDL	BDL	BDL			BDL	1.000	.020 <T
JUL	BDL	BDL	BDL			BDL	.850	BDL
AUG	BDL	BDL	BDL			BDL	.900	BDL
SEP	BDL	BDL	BDL			BDL	.720	BDL
OCT	BDL	BDL	BDL			BDL	.780	.060 <T
NOV	BDL	BDL	BDL			BDL	.800	BDL
DEC	BDL	BDL	BDL			BDL	.860	BDL

SITE	K21 TYPE	K21 RAW	MANNHEIM RESERVOIR	SITE 1 STANDING	SITE 1 FREE FLOW	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TRICHLOROETHYLENE (kg/L)								
JAN	BDL	BDL	DET'N LIMIT = .100	GUIDELINE = 5.0 (D1)	BDL	.300 <T	BDL	BDL
FEB	BDL	BDL			BDL	.300 <T	BDL	BDL
MAR	BDL	BDL			BDL	.300 <T	BDL	BDL
APR	BDL	BDL			BDL	.300 <T	BDL	BDL
MAY	BDL	BDL			BDL	.300 <T	BDL	BDL
JUN	BDL	BDL			BDL	.300 <T	BDL	BDL
JUL	BDL	BDL			BDL	.300 <T	BDL	BDL
AUG	BDL	BDL			BDL	.300 <T	BDL	BDL
SEP	BDL	BDL			BDL	.200 <T	BDL	BDL
OCT	BDL	BDL			BDL	.200 <T	BDL	BDL
NOV	BDL	BDL			BDL	.300 <T	BDL	BDL
DEC	BDL	BDL			BDL	.300 <T	BDL	BDL
DICHLOROBROMOMETHANE (kg/L)								
JAN	BDL	.300 <T	DET'N LIMIT = .050	GUIDELINE = 350 (A1+)	.250 <T	1,900	BDL	6,850
FEB	BDL	.250 <T			.200 <T	1,300	BDL	7,450
MAR	BDL	1.750			2,550	3,400	BDL	7,550
APR	BDL	2,800			4,500	6,300	BDL	7,600
MAY	BDL	2,250			1,900	4,900	BDL	7,100
JUN	BDL	.800 <T			.700	.650	BDL	4,150
JUL	.100 <T	.700				.350 <T	BDL	2,750
AUG	BDL	.400 <T			.400 <T	.250 <T	BDL	.900
SEP	BDL	.550			.550	.350 <T	BDL	1,050
OCT	BDL	.650			.600	.400 <T	BDL	1,500
NOV	BDL	.800			.700	.550	BDL	.650
DEC	BDL	1,050			.500 <T	.600	BDL	.850 <T
CHLORODIBROMOMETHANE (kg/L)								
JAN	BDL	.500 <T	DET'N LIMIT = .100	GUIDELINE = 350 (A1+)	.400 <T	3,900	BDL	1,900
FEB	BDL	.500 <T			.300 <T	2,600	BDL	2,500
MAR	BDL	2,100			4,000	5,900	BDL	2,100
APR	BDL	3,300			7,100	8,900	BDL	1,900
MAY	BDL	3,100			2,900	7,700	BDL	1,800
JUN	BDL	1,300			2,900	1,000	BDL	1,100
JUL	.100 <T	1,100			1,000	.500 <T	BDL	.600 <T
AUG	BDL	.700 <T			.700 <T	.300 <T	BDL	.200 <T
SEP	BDL	.800 <T			.500 <T	.500 <T	BDL	.500 <T
OCT	BDL	1,100			1,100	1,300	BDL	.500 <T
NOV	BDL	1,500			1,300	.900 <T	BDL	.200 <T
DEC	BDL	1,200			.700 <T	.600 <T	BDL	.200 <T

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	FREE FLOW	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
T-CHLOROETHYLENE (kg/L)			DETIN LIMIT = .050	GUIDELINE = 10.0 (C2)			
JAN	BDL	BDL	BDL	BDL	.050 <T	BDL	BDL
FEB	BDL	BDL	BDL	BDL	.100 <T	BDL	BDL
MAR	BDL	BDL	BDL	BDL	.100 <T	BDL	BDL
APR	BDL	BDL	BDL	BDL	.100 <T	BDL	BDL
MAY	BDL	BDL	BDL	BDL	.100 <T	BDL	BDL
JUN	BDL	BDL	BDL	BDL	.100 <T	BDL	BDL
JUL	BDL	BDL	BDL	BDL	.100 <T	BDL	BDL
AUG	BDL	BDL	BDL	BDL	.100 <T	BDL	BDL
SEP	BDL	BDL	BDL	BDL	.100 <T	BDL	BDL
OCT	BDL	BDL	BDL	BDL	.100 <T	BDL	BDL
NOV	BDL	BDL	BDL	BDL	.100 <T	BDL	BDL
DEC	BDL	BDL	BDL	BDL	.100 <T	BDL	BDL
BROMOFORM (kg/L)			DETIN LIMIT = .200	GUIDELINE = 350 (A1+)			
JAN	BDL	BDL	.600 <T	.400 <T	.400 <T	BDL	BDL
FEB	BDL	BDL	.400 <T	.200 <T	.200 <T	BDL	BDL
MAR	BDL	BDL	.800 <T	3.000	3.000	BDL	BDL
APR	BDL	BDL	1.000 <T	4.000	4.000	BDL	BDL
MAY	BDL	BDL	1.000 <T	1.400 <T	3.000	BDL	BDL
JUN	BDL	BDL	.800 <T	.400 <T	.600 <T	BDL	BDL
JUL	BDL	BDL	.600 <T	.600 <T	.600 <T	BDL	BDL
AUG	BDL	BDL	.400 <T	.400 <T	.400 <T	BDL	BDL
SEP	BDL	BDL	.600 <T	.200 <T	.200 <T	BDL	BDL
OCT	BDL	BDL	.800 <T	.800 <T	.400 <T	BDL	BDL
NOV	BDL	BDL	1.000 <T	1.000 <T	.600 <T	BDL	BDL
DEC	BDL	BDL	.800 <T	.600 <T	.600 <T	BDL	BDL
CHLOROBENZENE (kg/L)			DETIN LIMIT = .100	GUIDELINE = 1510 (D3)			
JAN	BDL	BDL	BDL	BDL	BDL	BDL	BDL
FEB	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MAR	BDL	BDL	BDL	BDL	BDL	BDL	BDL
APR	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MAY	BDL	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	BDL	BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
AUG	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SEP	BDL	BDL	BDL	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	BDL	BDL	BDL

SITE	TYPE	K21 RAW	MANNHEIM RESERVOIR	STANDING	SITE 1	FREE FLOW	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
1,2 DICHLOROBENZENE (µg/L)									
JAN	BDL	BDL	BDL	DETIN LIMIT = .050	GUIDELINE = 200 (81)	BDL	BDL	BDL	BDL
FEB	BDL	BDL	BDL			BDL	BDL	BDL	BDL
MAR	BDL	BDL	BDL			BDL	BDL	BDL	BDL
APR	BDL	BDL	BDL			BDL	BDL	BDL	BDL
MAY	BDL	BDL	BDL			BDL	BDL	BDL	BDL
JUN	BDL	BDL	BDL			BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL			BDL	BDL	BDL	BDL
AUG	BDL	BDL	BDL			BDL	BDL	BDL	BDL
SEP	BDL	BDL	BDL			BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL			BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL			BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL			BDL	BDL	BDL	BDL
TOTAL TRIFLUOROMETHANE (µg/L)									
JAN	BDL	BDL	1.500 <1	DETIN LIMIT = .500	GUIDELINE = 350 (A1)	1.450 <1	10.100	BDL	22.650
FEB	BDL	BDL	1.250 <1			.700 <1	7.400	BDL	22.950
MAR	BDL	BDL	7.350			11.150	15.200	BDL	23.350
APR	BDL	BDL	8.100			18.300	21.100	BDL	28.700
MAY	BDL	BDL	8.450			7.400	17.600	BDL	25.300
JUN	BDL	BDL	3.400 <1			2.800 <1	2.650 <1	BDL	21.650
JUL	BDL	BDL	.500 <1			2.700 <1	1.250 <1	BDL	12.850
AUG	BDL	BDL	1.800 <1			1.800 <1	.850 <1	BDL	7.200
SEP	BDL	BDL	2.250 <1			1.450 <1	1.150 <1	BDL	7.350
OCT	BDL	BDL	2.850 <1			2.750 <1	1.700 <1	BDL	8.200
NOV	BDL	BDL	2.700 <1			3.300 <1	2.450 <1	BDL	4.050 <1
DEC	BDL	BDL	3.650 <1			2.250 <1	2.200 <1	BDL	5.350

TRACE LEVELS OF TOLEUENE ARE ARTIFACTS DERIVED FROM THE ANALYTICAL METHODOLOGY

TRACE LEVELS OF STYRENE ARE CONSIDERED TO BE LABORATORY ARTIFACTS RESULTING FROM THE LABORATORY SHIPPING CONTAINERS

Table 6

<u>SCAN/PARAMETER</u>	<u>UNIT</u>	<u>DETECTION</u>	
		<u>LIMIT</u>	<u>GUIDELINE</u>
BACTERIOLOGICAL			
FECAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	0 (A1)
STANDARD PLATE COUNT MEMBRANE FILTRATION	CT/ML	0	500/ML(A1)
TOTAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	5/100mL(A1)
TOTAL COLIFORM BACKGROUND MF	CT/100ML	0	N/A
CHLOROAROMATICS			
HEXAChLOROBUTADIENE	NG/L	1.000	450. (D4)
1,2,3-TRICHLOROBENZENE	NG/L	5.000	10000 (I)
1,2,3,4-TETRACHLOROBENZENE	NG/L	1.000	10000 (I)
1,2,3,5-TETRACHLOROBENZENE	NG/L	1.000	10000 (I)
1,2,4-TRICHLOROBENZENE	NG/L	5.000	10000 (I)
1,2,4,5-TETRACHLOROBENZENE	NG/L	1.000	38000 (D4)
1,3,5-TRICHLOROBENZENE	NG/L	5.000	10000 (D4)
HEXAChLOROBENZENE	NG/L	1.0	10. (C1)
HEXAChLOROETHANE	NG/L	1.000	1900. (D4)
OCTAChLOROSTYRENE	NG/L	1.000	N/A
PENTACHLOROBENZENE	NG/L	1.000	74000 (D4)
2,3,6-TRICHLOROTOLUENE	NG/L	5.000	N/A
2,4,5-TRICHLOROTOLUENE	NG/L	5.000	N/A
2,6,A-TRICHLOROTOLUENE	NG/L	5.000	N/A
CHLOROPHENOLS			
2,3,4-TRICHLOROPHENOL	NG/L	50.	N/A
2,3,4,5-TETRACHLOROPHENOL	NG/L	50.	N/A
2,3,5,6-TETRACHLOROPHENOL	NG/L	50.	N/A
2,4,5-TRICHLOROPHENOL	NG/L	50.	2600000 (D4)
2,4,6-TRICHLOROPHENOL	NG/L	50.	2000. (B4)
PENTACHLOROPHENOL	NG/L	50.	30000. (B4)
CHEMISTRY (FLD)			
FIELD COMBINED CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD FREE CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD TOTAL CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD pH	DMSNLESS	N/A	6.5-8.5(A4)
FIELD TEMPERATURE	°C	N/A	<15 °C(A1)
FIELD TURBIDITY	FTU	N/A	1.0 (A1)
CHEMISTRY (LAB)			
ALKALINITY	MG/L	.200	30-500(A4)
CALCIUM	MG/L	.100	100. (F2)
CYANIDE	MG/L	.001	.20(A1)
CHLORIDE	MG/L	.200	250. (A3)
COLOUR	TCU	.5	5.0 (A3)
CONDUCTIVITY	UMHO/CM	1.	400. (F2)
FLUORIDE	MG/L	.01	2.4 (A1)
HARDNESS	MG/L	.50	80-100(A4)
MAGNESIUM	MG/L	.05	30. (F2)
SODIUM	MG/L	.20	200. (C3)
AMMONIUM TOTAL	MG/L	.002	.05(F2)
<u>SCAN/PARAMETER</u>	<u>UNIT</u>	<u>DETECTION</u>	
		<u>LIMIT</u>	<u>GUIDELINE</u>
NITRITE	MG/L	.001	1.0 (A1)
TOTAL NITRATES	MG/L	.02	10. (A1)
NITROGEN TOTAL KJELDAHL	MG/L	.02	N/A
pH	DMSNLESS	N/A	6.5-8.5(A4)
PHOSPHORUS FIL REACT	MG/L	.0005	N/A
PHOSPHORUS TOTAL	MG/L	.002	.40(F2)
SULPHATE	MG/L	.200	500. (A3)
TOTAL SOLIDS	MG/L	1.	500. (A3)
TURBIDITY	FTU	.02	1.0 (A1)

ANTIMONY	UG/L	.050	10.	(F3)
ARSENIC	UG/L	.050	50.	(A1)
BARIUM	UG/L	.020	1000.	(A1)
BORON	UG/L	.200	5000.	(A1)
BERYLLIUM	UG/L	.010	0.20	(H)
CADMIUM	UG/L	.050	5.0	(A1)
COBALT	UG/L	.020	1000.	(H)
CHROMIUM	UG/L	.100	50.	(A1)
COPPER	UG/L	.100	1000.	(A3)
IRON	UG/L	5.0	300.	(A3)
MERCURY	UG/L	.01	1.0	(A1)
MANGANESE	UG/L	.050	50.	(A3)
MOLYBDENUM	UG/L	.020	500.	(H)
NICKEL	UG/L	.100	50.	(F3)
LEAD	UG/L	.020	50.	(A1)
SELENIUM	UG/L	.200	10.	(A1)
SILVER	UG/L	.020	50.	(A1)
STRONTIUM	UG/L	.100	2000.	(H)
THALLIUM	UG/L	.010	13.	(D4)
TITANIUM	UG/L	.100	N/A	
URANIUM	UG/L	.020	20.	(A2)
VANADIUM	UG/L	.020	100.	(H)
ZINC	UG/L	.020	5000.	(A3)

PHENOLICS

PHENOLICS (UNFILTERED REACTIVE)	UG/L	.2	2.0	(A3)
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PESTICIDES & PCB

ALDRIN	NG/L	1.0	700.	(A1)
AMETRINE	NG/L	50.	300000.	(D3)
ATRAZINE	NG/L	50.	60000.	(B3)
ALPHA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	700.	(G)
BETA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	300.	(G)
GAMMA HEXACHLOROCYCLOHEXANE (LINDANE)	NG/L	1.0	4000.	(A1)
ALPHA CHLORDANE	NG/L	2.0	7000.	(A1)
GAMMA CHLORDANE	NG/L	2.0	7000.	(A1)
BLADEX	NG/L	100.	10000.	(B3)
DIELDRIN	NG/L	2.0	700.	(A1)
METHOXYCHLOR	NG/L	5.0	900000.	(B1)
ENDOSULFAN 1 (THIODAN I)	NG/L	2.0	74000.	(D4)
ENDOSULFAN 2 (THIODAN II)	NG/L	4.0	74000.	(D4)
ENDRIN	NG/L	4.0	200.	(A1)
ENDOSULFAN SULPHATE (THIOODAN SULPHATE)	NG/L	4.0	N/A	

DETECTION

<u>SCAN/PARAMETER</u>	<u>UNIT</u>	<u>LIMIT</u>	<u>GUIDELINE</u>
HEPTACHLOR EPOXIDE	NG/L	1.0	3000. (A1)
HEPTACHLOR	NG/L	1.0	3000. (A1)
METOLACHLOR	NG/L	500.	50000. (B3)
MIREX	NG/L	5.0	N/A
OXYCHLORDANE	NG/L	2.0	N/A
O,P-DDT	NG/L	5.0	30000. (A1)
PCB	NG/L	20.0	3000. (A2)
O,P-ODD	NG/L	5.0	N/A
PPDDE	NG/L	1.0	30000. (A1)
PPDDT	NG/L	5.0	30000. (A1)
ATRATONE	NG/L	50.	N/A
ALACHLOR	NG/L	500.	35000. (D2)
PROMETONE	NG/L	50.	52500. (D3)
PROPAZINE	NG/L	50.	16000. (D2)
PROMETRYNE	NG/L	50.	1000. (B3)
SENCOR (METRIBUZIN)	NG/L	100.	80000. (B2)
SIMAZINE	NG/L	50.	10000. (B3)

POLYAROMATIC HYDROCARBONS

PHENANTHRENE	NG/L	10.0	N/A
ANTHRACENE	NG/L	1.0	N/A
FLUORANTHENE	NG/L	20.0	42000. (D4)
PYRENE	NG/L	20.0	N/A
BENZO(A)ANTHRACENE	NG/L	20.0	N/A
CHRYSENE	NG/L	50.0	N/A
DIMETHYL BENZO(A)ANTHRACENE	NG/L	5.0	N/A
BENZO(E)PYRENE	NG/L	50.0	N/A
BENZO(B)FLUORANTHENE	NG/L	10.0	N/A

PERYLENE	NG/L	10.0	N/A
BENZO(K)FLUORANTHENE	NG/L	1.0	N/A
BENZO(A)PYRENE	NG/L	5.0	10. (B1)
BENZO(G,H,I)PERYLENE	NG/L	20.0	N/A
DIBENZO(A,H)ANTHRACENE	NG/L	10.0	N/A
INDENO(1,2,3-C,D)PYRENE	NG/L	20.0	N/A
BENZO(B)CHRYSENE	NG/L	2.0	N/A
CORONENE	NG/L	10.0	N/A

SPECIFIC PESTICIDES

TOXAPHENE	NG/L	N/A	5000. (A1)
2,4,5-TRICHLOROBUTYRIC ACID (2,4,5-T)	NG/L	50.	200000. (B4)
2,4-DICHLOROBUTYRIC ACID (2,4-D)	NG/L	100.	100000. (A1)
2,4-DICHLOROPHENOXIBUTYRIC ACID	NG/L	200.	18000. (B3)
2,4-D PROPIONIC ACID	NG/L	100.	N/A
DICAMBA	NG/L	100.	120000. (B1)
PICLORAM	NG/L	100.	190000. (B3)
SILVEX (2,4,5-TP)	NG/L	50.	10000. (A1)
DAZINON	NG/L	20.	20000. (B1)
DICHLOROVOS	NG/L	20.	N/A
DURSBAN	NG/L	20.	N/A
ETHION	NG/L	20.	35000. (G)
GUTHION (AZINPHOSMETHYL)	NG/L	N/A	20000. (B1)
MALATHION	NG/L	20.	190000. (B1)
MEVINPHOS	NG/L	20.	N/A
METHYL PARATHION	NG/L	50.	7000. (A1)
METHYLTRITHION	NG/L	20.	N/A

DETECTION

SCAN/PARAMETER	UNIT	LIMIT	GUIDELINE
PARATHION	NG/L	20.	50000. (B1)
PHORATE (THIMET)	NG/L	20.	2000. (B3)
RELDAN	NG/L	20.	N/A
RONNEL	NG/L	20.	N/A
AMINOCARB	NG/L	N/A	N/A
BENONYL	NG/L	N/A	N/A
BUX (METALKAMATE)	NG/L	2000.	N/A
CARBOFURAN	NG/L	2000.	90000. (B1)
CIPC (CHLORPROPHAM)	NG/L	2000.	350000. (G)
DIALLATE	NG/L	2000.	30000. (H)
EPTAM	NG/L	2000.	N/A
IPC	NG/L	2000.	N/A
PROPOXUR (BAYGON)	NG/L	2000.	90000. (G)
SEVIN (CARBARYL)	NG/L	200.	90000. (B1)
SUTAN (BUTYLATE)	NG/L	2000.	245000. (D3)

VOLATILES

BENZENE	UG/L	.050	5.0 (B1)
TOLUENE	UG/L	.050	24.0 (B4)
ETHYLBENZENE	UG/L	.050	2.4 (B4)
PARA-XYLENE	UG/L	.100	300. (B4)
META-XYLENE	UG/L	.100	300. (B4)
ORTHO-XYLENE	UG/L	.050	300. (B4)
1,1-DICHLOROETHYLENE	UG/L	.100	7.0 (D1)
ETHYLENE DIBROMIDE	UG/L	.05	.05 (G)
METHYLENE CHLORIDE	UG/L	.500	50. (B1)
TRANS-1,2-DICHLOROETHYLENE	UG/L	.100	70. (D5)
1,1-DICHLOROETHANE	UG/L	.100	N/A
CHLOROFORM	UG/L	.100	350. (A1+)
1,1,1-TRICHLOROETHANE	UG/L	.020	200. (D1)
1,2-DICHLOROETHANE	UG/L	.050	5.0 (D1)
CARBON TETRACHLORIDE	UG/L	.200	5.0 (B1)
1,2-DICHLOROPROPANE	UG/L	.050	6.0 (D5)
TRICHLOROETHYLENE	UG/L	.100	50. (B1)
DICHLOROBROMOMETHANE	UG/L	.050	350. (A1+)
1,1,2-TRICHLOROETHANE	UG/L	.050	.60(D4)
CHLORODIBROMOMETHANE	UG/L	.100	350. (A1+)
TETRACHLOROETHYLENE	UG/L	.050	10.0 (C2)
BROMOFORM	UG/L	.200	350. (A1+)
1,1,2,2-TETRACHLOROETHANE	UG/L	.050	0.17(D4)
CHLOROBENZENE	UG/L	.100	60. (B5)
1,4-DICHLOROBENZENE	UG/L	.100	1.0 (B4)
1,3-DICHLOROBENZENE	UG/L	.100	130. (G)

1,2-DICHLOROBENZENE	UG/L	.050	3.0 (B4)
TRIFLUOROCHLOROTOLUENE	UG/L	.100	N/A
TOTAL TRIHALOMETHANES	UG/L	.500	350. (A1)
STYRENE	UG/L	.05	140. (D5)

